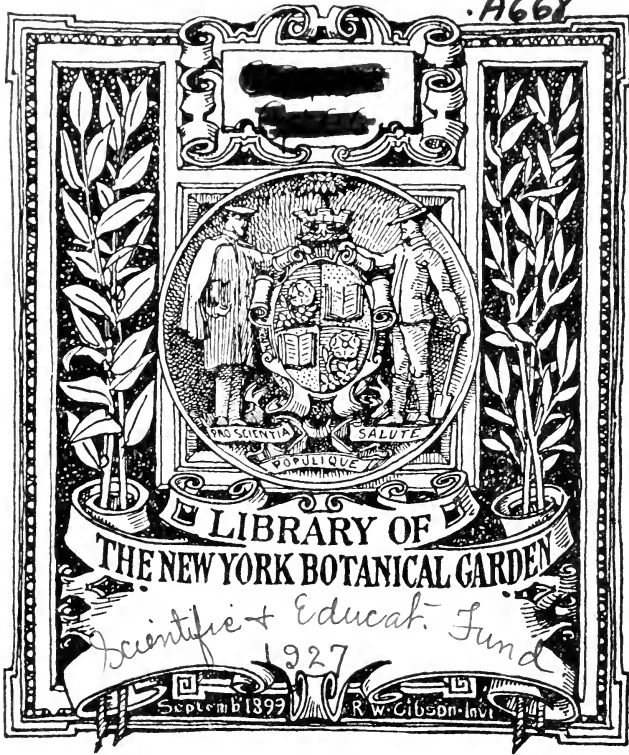


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THE
G A R D E N E R

A M A G A Z I N E
OF
HORTICULTURE AND FLORICULTURE

EDITED BY
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JANUARY 1873.

PHYLLOXERA VASTATRIX.



ORTICULTURISTS have within the last few years had a most formidable addition to the host of foes with which they have to grapple in the successful cultivation of the Grape-Vine. And it is scarcely possible to conceive of a more insidious and destructive enemy than the new invader—*Phylloxera vastatrix*—is proving itself to be. Any who have had an opportunity of watching the destructive power of this tiny insect, will not be at all surprised to know that the French Government are so alarmed at its appearance that they have offered a reward of a million francs to any person who will devise a means of destroying the pest, without, at the same time, destroying the Vines—especially when the enormous interest that France has at stake in her vineyards is taken into consideration. According to the report of E. L. Beckwith, Esq., on the Vines of the Universal Exhibition at Paris in 1868, the quantity of wine manufactured annually in France amounts to 831,000,000 gallons, exclusive of 165,000,000 distilled into brandy. Taking this enormous quantity at the very low average rate of 2s. 6d. per gallon, it can easily be understood why France is so much concerned and dismayed at the progress of a foe which perils the very existence of her vineyards, and how this army of insects threatens to be a more formidable foe, in a pecuniary sense, than the squadrons of the German Emperor. It is already committing alarming ravages in some of the wine departments of France, and has spread into Spain, Portugal, and Austria.

About eight years ago the *Phylloxera* unfortunately made itself known in this country, and has proved fatal to the Vines in some

English vineries, crossed the Channel to Ireland and the Borders to Scotland. We have recently heard of its fatal effects in a good many of the English counties. We have no conclusive proof up to this time that it exists in any place in Scotland except Drumlanrig, although we have heard of the Vines in several places in Scotland having in some cases died outright, and in others being curiously affected. Though such circumstances are suspicious, it can only be hoped that it is not the result of Phylloxera.

After the most careful observation, we have come to the conclusion that there does not exist in British gardens another insect that can be compared to Phylloxera, in the rapidity and certainty with which its work of destruction, in the case of the Vine, is carried on, nor one that is so difficult to combat successfully without the most prompt and ultra means. And in the interest of British Grape-growing, all who have any knowledge or experience of this destroyer should proclaim its whereabouts, and record their experience and observations; and at the same time, and above all, give it no quarter by risking its existence by any half-measures, but remorselessly stamp it out as the most formidable pest that ever found its way into a vinery. Indeed, we do not know that it is not a matter quite worthy of being dealt with as the rinderpest in cattle has been dealt with by the powers that be.

It will be in the recollection of many of our readers, that in the 'Gardener' of 1869 (page 202), illustrations of this insect are given, and a paper which originally appeared from the pen of M. J. E. Planchon in the 'Comptes-Rendus de l'Institut' is translated. The history and habits, as far as then known, of the pest, are there minutely described.

Regarding the appearance of the insect, and the rapidity with which it multiplies and devours its prey, the writer's observations are correct; but we differ to some extent on the theory which he propounds as to its mode of attack. We refer to the article in question for the entomology of this little devourer, and will now detail some of our observations as to its effects, its mode of attack, and circumstances which favour its spread, &c. We may here state that not one of the observations to which we refer has been intrusted only to one pair of eyes, and that all that will be related has been corroborated by two and sometimes more observers. The insect is so minute—less than a cheese-mite—that all observations have to be microscopic.

The first warning that some evil was present in a vinery erected in the autumn of 1869, and planted in 1870, was, that two Vines at the end of the house, and that grew with great and satisfactory vigour all through 1870 and up to the midsummer of 1871, soon after the

latter date began to flag. The leaves got prematurely yellow, and dropped off. Not for a moment suspecting the real cause, we were much puzzled at the occurrence, it being entirely new in our experience. But as the effect was so limited in its extent, and the two Vines being supernumeraries, and being heavily cropped, the impression wore off, and no minute investigation took place. In the spring of 1872, most of the supernumeraries that bore heavily in 1871 were removed, and the whole of the permanent Vines from one end of the house to the other broke with equal vigour, every shoot being literally packed at their points with fruit. All seemed to go right till the young growths were about 3 inches long, and the stored-up sap was exhausted. Then all the Vines at one end of the vinery, extending to the middle of it, called a halt, and those at the opposite end bounded on their way, running out their bunches as might have been expected. The affected half "spindled" like straws, and the bunches never ran out properly. The roots were of course instantly examined, and all the most fibry and active parts of them were found in a peculiar half-dead-looking condition. Not even then suspecting *Phylloxera* as a cause, the occurrence was a puzzle, and some application was suspected, though I knew of nothing but pure river-water and a little soap that had been used in washing the woodwork and glass. Notches or incisions were then cut in the boles of the Vines, above the surface of the soil, and a little fresh loam put round them. There they soon emitted strong bunches of roots, and they made a tremendous struggle for life, and sent their leaders to the top of a long rafter, but woefully weak compared to those at the other end of the house, and the bunches were like black currants comparatively.

As time went on, galls were discovered on the under sides of the leaves at the affected end of the vinery, and this soon revealed the foe that had been carrying on its work of destruction in ambush at the roots, and on which it was found in myriads. The invader spread towards the other end of the house as steadily and regularly as a fire would progress; and each Vine it attacked on its onward march drooped, and shed its leaves suddenly and prematurely. Before it got to the extreme end of the house, the Vines had brought to maturity a fine crop of large bunches, and were showing no signs of distress; but—and this will give some idea of the rapidity with which the work of destruction is effected—in a month afterwards some of the Vines were literally dead, not having a live root; and to save the Grapes they had to be cut wholesale.

In the same range, and adjoining this house, is a Muscat-house, the Vines in which ripened a fine crop of Grapes to a beautiful golden colour; and on two grafts of Gros Guillaume there were ten bunches,

weighing from 6 to 8 lb. each. It was not till October that the presence of the Phylloxera was suspected here, and by the end of November the roots of the whole of these Vines were literally covered with it—so much so, that looked at with the naked eye, the insect imparted its own colour to the roots; and viewed through a microscope, they were seen to be clustered on the top of each other like miniature swarms of bees, so rapidly had they spread and multiplied.

So much for the destructive ability of Phylloxera. We will now briefly refer to the most important of our observations regarding its habits, &c. In each gall, formed numerously on the under sides of the leaves, there was generally one full-grown insect—and clustered round it, just as described by M. Planchon, eight or nine eggs. The mature insect is of a yellowish-brown colour; and, examined through a powerful microscope, is so transparent that the eggs can be seen in its inside. The eggs are equally transparent, and both are very easily destroyed. Even the full-grown insect appears to be made of a thin transparent skin, easily broken, and of a thin transparent viscid matter internally. The way into this breeding-gall is from the upper side of the leaf. We have never been able to discover any above ground, except those in the galls; and have seen only one of the insects with wings, which is supposed to be the male, and that was on the under side of a leaf, and appeared in a semi-dormant state. Underground, on the roots, they breed and spread with marvellous rapidity, and cover the roots so densely that they impart to them their own colour. They effect the destruction of the Vine by eating all the bark off the roots, and burrowing into the second coating of the young roots; and after destroying that, they seem to move on to fresh roots, for we have not in one single instance found an insect on a root after it has been peeled and begun to decay. Contrary to the French theory that it attacks the roots at the neck of the Vine, and works downwards towards the more young and fibry roots, it has been invariably found that they have begun at the points of the roots, and devoured upwards towards the bole of the Vine.

It is also quite evident that, like red-spider on the leaves, it thrives best in a dryish warm soil. Having decided to thoroughly stamp out the pest by removing the whole border, we did not cover the outside border with wooden shutters early in October, as usual; and, owing to the unusual rainfall of the autumn, the soil was of course very wet and cold outside. The most careful examination of the roots outside in this cold damp medium did not lead to the discovery of an insect on the roots up to the arches of the front of the house. The pest, however, was found in swarms to the very point at which the roots left the protection of the stonework, where the soil was much

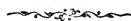
drier, and here there was an abrupt limit to their extension. On the worst affected roots not one was found beyond the arch, in which case it is clear they had worked from the inside along the roots, but in all cases did not move beyond the arches, proving that the insect does not like cold and wet. Prompted by this observation, some pieces of roots literally covered with the insects were steeped in clean soft water, and they were all dead in from forty-eight to sixty hours. So that any one receiving Vines who had any dread of this pest, would do well to steep them in a tank for four or five days. We also found that three hours' exposure to 4° to 6° frost effectually destroys it. Pieces of fresh roots densely infected with it were also left exposed to the air in the vinery, and in two days the insects were all dried up and dead. Roots were also done up in brown paper without any soil, and on them they died in the same space of time; in fact, seemed to evaporate. A few drops of carbolic acid in a wine-glassful of water proved instant death to them, and a very weak solution of Condry's fluid had the same effect. In fact, everything that we have learned of this insect goes to prove that it is easily killed when it can be got at.

Numerous experiments have been tried to see if the insect would attack or live on other fruit-trees besides the Vine. A Currant-bush and a Fig were planted among the roots of the Vines on which it swarmed in legions. These plants were allowed to remain for weeks, and they pushed out quantities of young rootlets into the very centre of the pest's strongest hold, but not one insect could be found adhering to either the Currant or the Fig. A young Vine planted where the insect was not considered so strong was attacked by it in legions. Pieces of Vine-roots coated with the pest were laid on a board, and around them and touching them were placed fresh pieces of the roots of the Peach, the Cherry, the Pear, the Gooseberry, Black Currant, and Plum. The whole were covered with some soil, and a large bell-glass placed over them, and left for fourteen days: at the end of that time they were examined minutely through the microscope, but not one insect had gone on to the roots of these fruits. On to a piece of Vine-root that was put along with them in a clean state they did go. These experiments go to prove that Phylloxera does not care so much for any of the fruits named as it does for the Vine. On pieces of Vine-roots laid upon the same board—not covered with soil, but merely covered with a bell-glass—the insect was found quite shrivelled up and dead. Tobacco-smoke, however strong, does not seem to affect the insect, for we placed it in a glass vessel and filled it as full of tobacco-smoke as it could be, but the insect remained alive.

There are scores of decoctions that will kill this insect—such as salt, hellebore, &c.; but the difficulty to overcome lies in the depth of soil to

be so acted on ; for a few insects left still leave the enemy in possession of the field, and there can be no certainty of stamping it out in this way. We believe that to submerge the whole border and vines in clean water would destroy the insect ; but what of the eggs or larvæ ? Mr Dunn, of Dalkeith Gardens, when at Powerscourt, in Ireland, got rid of it in some vineries there by lifting and washing the roots of the Vines, and merely picking all the roots out of the soil, and mixing dry soot and caustic lime with the old soil, and replanting the Vines ; and great credit is due to him for the process. But we are certain that he will agree with us that that process leaves some risks in the way of stamping it out ; and we know of a place in England where even more radical means failed. Therefore it must be admitted that the most certain way of stamping out this destroyer is to burn the Vines, remove right away all the soil, well salt the site of the border, and well wash and paint everything connected with the vinery before fresh soil is put in. This is the process that we are adopting ; and we think, in the interests of Grape-growing, all who have this pest in their vinery should pursue the same course.

We will be glad to publish anything that is forwarded to us that will aid in making the Phylloxera and its habits better known, and that may be useful to those who wish to stamp it out. All remedies that have as yet been applied to the soil—either in this country or on the Continent—have failed in destroying Phylloxera from off the roots of the Vine ; and it is at present an opinion that it is not very likely that a remedy will be found that will do so, without, at the same time, destroying the Vines ; and that in lifting and cleaning and replanting affected Vines, there is a risk of failure which is more certainly avoided by destroying the Vines and renewing the border.



NOTES ON HARDY CONIFERS.

JUNIPERUS (THE JUNIPER).

THE shrubs and trees which form this large and important section of the Coniferæ are for the most part natives of the temperate and colder regions of Europe, Asia, Africa, and America, and are with few exceptions thoroughly hardy, and easily cultivated in Britain.

All the known species are evergreen, and though very varied in stature and habits of growth, the great majority of them are valuable decorative plants, and as such are extensively planted on our lawns and pleasure-grounds, where, though preferring a deep sandy or gravelly loam, and an elevated rather than a low confined situation, they are found to succeed well in ordinary soils, if well drained.

The Junipers are readily distinguished from their near allies the Cypresses, which in general appearance they very much resemble, by their cones—the scales of which, instead of being hard and dry, are soft and fleshy, like berries—as well as by that peculiar flavour for which they are used in the manufacture of Gin and Hollands, and which, though strongest in the fruit, exists to a greater or less extent in every part of the plant.

The wood of all the species, besides being of a beautiful colour, is light, fragrant, and remarkably durable, fitting it for the finest cabinet-work; and that of Bermudiana, a grand but unfortunately tender species, is the pencil-Cedar, well known all over the world.

From a great array of really fine ornamental species and varieties, we cull the following as specially worthy the attention of planters of decorative shrubs and trees:—

J. communis (*the Common Juniper*), found wild in all soils and situations in Scotland, England, and Ireland, as well as over a wide range of Continental Europe and Asia, is a bushy shrub, growing to heights of from 10 to 15 feet in good soils and sheltered places, but dwarfing down in high sterile exposures to a mere trailing bush of a few inches above the ground.

In cultivation it is a pretty plant, with a dense bushy habit, and interesting as a distinct variety in a collection; but it is mostly used for planting in masses for game-cover, or for clothing steep, rocky banks, where the soil is scanty and poor.

Of this species the following handsome varieties are universal favourites: *J. Suecica*, known as the Swedish Juniper, but also found abundantly in several other countries of Northern Europe, has a narrow, compact, conical habit of growth, with longer leaves and a brighter green colour than the species, and rises in sheltered situations to heights of from 15 to 20 feet; the Irish *J. Hibernica*, found on mountains in Ireland, has short glaucous-coloured leaves, and a more compressed, sharply conical form than the Swedish variety, and in general appearance resembles the Irish Yew, with which it makes a pleasing contrast. *J. Hibernica compressa* is a dwarfier, more compact and elegant variety of the preceding, very useful for planting in situations where a neat, close-growing plant is required. Though quite hardy, all the varieties will be found to grow best where they are moderately sheltered from high winds.

J. oxycedrus (*the Prickly Juniper*), found widely distributed and in great abundance on mountains in France and other countries of Southern Europe, growing to heights of from 10 to 12 feet, was first introduced into Britain about 1739. It is a well-known hardy shrub, with an upright conical habit of growth, the branchlets rather open,

and slightly pendulous at the extremities, and very desirable in a collection of ornamental shrubs. It must always be planted in a dry soil, and a moderately-sheltered situation.

J. Virginiana (*the Red Cedar*), so named in reference to the beautiful red heart-wood of the tree, is a native of the United States, where it occurs over an immense area, and in the greatest abundance, rising to heights of from 40 to 50 feet, with a diameter near the ground of $1\frac{1}{2}$ foot. It has been known in this country for more than 200 years, and has been largely grown in ornamental collections, proving itself thoroughly hardy, and adapting itself to most soils and situations. In habit of growth it is sharply conical, densely branched; and among the many varieties which occur when raised from seed, are found a great variety of tints of colour, from the lightest to the darkest green. In some situations it assumes a brownish tint in winter.

J. drupacea (*the Plum-fruited Juniper*) is indigenous to the north of Syria and mountains in Asia Minor, where it forms a bushy shrub of about 10 feet high, and was introduced into this country in 1820.

This very hardy and distinct species has a narrow conical habit of growth, branched to the ground; the branchlets are abundantly clothed with leaves of about $\frac{3}{4}$ of an inch long, set in regular whorls round the stem, and of a light grassy-green colour.

Any dry deep soil, not over-rich, and a moderate shelter from violent winds, will be found sufficient for its wants; and when planted on a lawn as a single specimen, where it has plenty of space, few ornamental plants are more interesting and attractive.

J. Chinensis (*the Chinese Juniper*).—This grand species is found in great abundance in high mountain-valleys in China and Japan, growing to heights of from 20 to 30 feet, and was first sent home in 1820.

In this species the male and female forms are very dissimilar, the latter being known as “flagelliformis,” and was long considered a distinct species. Of the two the male plant is by far the most ornamental, and undoubtedly one of the handsomest of our hardy Conifers, making a magnificent lawn specimen-plant, and contrasting most effectively with the dark-coloured shrubs in mixed masses or rows. It has a neat conical habit of growth, closely branched from the ground upwards; the foliage is generally slightly glaucous, sometimes bright green; and occasionally branchlets of both tints appear on the same plant. It produces its bright golden catkins in great profusion in May, and is then an object of great beauty.

Like most of the other species, *J. Chinensis* is of easy cultivation, and will succeed in almost any soil and situation, if the subsoil is sufficiently porous to prevent an undue accumulation of water at the roots.

There are two or three varieties more or less distinct from the species

and well worthy the attention of collectors of fine shrubs. Of these we note the two following variegations, which, when more plentiful and better known, will doubtless be extensively planted in every collection : Argenteus, a pretty glaucous form, with a large proportion of the branchlets pure white, the variegation constant, and equally beautiful in winter as in summer, while the plant is as hardy as the parent. Aureus, one of the new plants of this year, sent out by Mr Maurice Young of the Godalming Nurseries, is one of the finest golden variegated Conifers in cultivation, the whole plant suffused with a rich golden hue, as bright as that of the Queen Golden Holly. The constancy of its variegation and the hardiness of its constitution remain of course to be tested ; but there is every reason to believe that it possesses these desirable qualities, and that it will prove a valuable acquisition to the already long list of hardy ornamental Conifers.

J. excelsa (*the Tall Juniper*).—Indigenous to the islands of the Grecian Archipelago and mountainous districts in several adjoining countries, growing to heights of from 30 to 40 feet. Introduced into Britain about 1806.

In our shrubberies and pleasure-grounds it is a very neat, somewhat slow-growing plant, with a dense conical habit of growth, the foliage very short, thickly set on the branchlets, and of a peculiar and pleasing glaucous-grey colour. It is a most effective lawn specimen-shrub, contrasting well with the more sombre-foliaged Conifers, and well worthy of extensive introduction among choice decorative plants.

It is found to succeed best where the soil is deep and rich, and requires a well-sheltered situation.

A superb variety of recent introduction appropriately named *stricta*, differs from the species in having a narrower conical habit, tapering up to a sharp point, with the branches more compressed, and altogether more rigid and formal in its appearance ; is admirably adapted for small geometric gardens, or for terraces, and lawns of limited extent. It is equally hardy with the species, and well deserves the attention of collectors of really handsome shrubs.

J. sabina (*the Savin Juniper*).—This well-known and very ornamental species is found wild on the Alps, Apennines, Pyrenees, and other mountains in Southern Europe, forming a bushy shrub of from 7 to 8 feet high, and has been cultivated in British gardens for nearly 300 years.

It is here a low spreading bush, thickly branched, and abundantly clothed with tiny foliage of the darkest sombre green.

Wanting in that formal symmetry of habit so characteristic of many of its allies, and so desirable for lawn plants, it is nevertheless a very ornamental shrub, well fitted for mixed shrubberies, or for planting on

or in the neighbourhood of rockeries, to which it imparts an interesting and picturesque appearance.

It should always be planted in a rich but dry soil, and in a shaded and moderately-sheltered situation.

The variety *variegata* differs only from the species in having the green branches interspersed with those of a pure white colour, and is a most desirable and effective plant. A dwarf trailing form, by some botanists ranked as a distinct species, and named *prostrata*, found wild in the United States, has a great resemblance in everything except habit to the species. It is a fine plant for rockwork, or for clothing steep banks, forming a close carpet never above a few inches high, and growing most luxuriantly when planted in some such dry and elevated situation.

J. recurva (*the Weeping Juniper*), from mountains in Nepal and Bhotan, at elevations of from 8,000 to 10,000 feet above the level of the sea, where it grows to heights of from 10 to 15 feet. Introduced into Britain in 1830.

The male and female forms of this species are very distinct from each other, and both are very handsome and desirable ornamental shrubs. The male, which is named *densa*, has long looser foliage and a much denser, dwarfer habit of growth than the female, which was first introduced, and is still known by the specific name *recurva*. The branches of the female droop gracefully at the extremities, and the whole plant has an elegant feathery appearance. In both forms the foliage is of dark sombre green. They are very hardy in this country if sheltered from high winds, and succeed best in a rich, stiff, loamy soil, and in a slightly-shaded situation.

J. squamata (*the Scaly-leaved Juniper*) is a native of the Himalayas and Bhotan Alps, at elevations of from 8,000 to 15,000 feet; is a decumbent shrub, rarely growing higher than from 3 to 5 feet; was introduced in 1824.

It is thoroughly hardy even in the most exposed situations in this country, and one of the prettiest rockwork shrubs in cultivation. The branchlets are densely covered with short thick leaves of a slightly glaucous colour.

J. tamariscifolia (*the Tamarisk Juniper*), a native of Spain and the mountains of Southern Europe, was introduced in 1562; has a habit of growth very similar to the preceding, rarely rising above 3 feet from the ground, and forming a close cushion-like bush, with a pretty silvery green colour. It is a beautiful rockwork plant, very distinct from any of the other dwarf species, and so hardy that there are few situations where it will not succeed.

HUGH FRASER.

NOTES ON THE SELECTION OF VARIETIES.

IN order to be successful in the ordinary routine of a garden, or in the culture of either fruits, flowers, or vegetables, there are certain natural laws relating to light, heat, air, soils, and moisture, which must be fulfilled. These laws, or axioms of vegetable physiology, are either directly or indirectly understood by most of our practical horticulturists; but, at the same time, I have often thought that our present subject has not been studied or worked out in practice so much as it, from its importance to mankind in general, deserves. Our success in the cultivation of fruits, flowers, or vegetables, depends in a great measure on the selection of good varieties, according to the particular season of the year at which the crop is required. To illustrate more fully the results of careful selection, we need only point to the magnificent new Grapes of a Thompson, a Pearson, or a Standish; the beautiful Fuchsias of Cannel or Smith; the zonal Pelargoniums of Turner, Grieve, or Wills; or the Peas of Laxton,—to say nothing of other horticulturists whom we could name by the dozen did our space permit, and who equally deserve our admiration and respect.

The improvement of races is one of the most noble of all pursuits; and by devoting some portion of our lives to this laudable object, we not only reap in many cases a rich harvest ourselves, but we leave a goodly heritage to posterity—a monument more durable than either gilded marble or burnished brass. To come to a practical argument, the improvement of existing forms or races depends in a great measure on the judicious selection of the pollen and seed-bearing parents, added to a careful weeding out of the seedlings themselves, so as to insure as far as possible constitutional vigour. It often occurs that the most lanky and debilitated seedlings will produce the finest or richest-coloured flowers; but seedling cross-breds, or hybrids that have a bad habit of growth, should never be tolerated, except to cross with plants of a better habit and better constitution. A plant of any kind, to be perfect in its class, must have the best habit of growth as well as the finest flower or noblest fruit; for to obtain a fine flower or fruit at the expense of a neat habit, or of constitutional health and vigour, is at the best only a questionable improvement.

Florists' flowers afford us familiar examples; but if we look at either stove or greenhouse plants, Orchids or Ferns, we often find extreme variability in the habits of different individuals of the same species, or in the relative size, colour, period, or profusion of their flowers. It is these distinctions that give us the opportunity of exercising our judicial powers of selection, and the practical result is the propagation of those marked forms best suited to our tastes or requirements, as

the case may be. The best varieties of plants give no more trouble to the cultivator than do inferior forms of the same species, often much less; hence we may reasonably infer that by growing carefully-selected varieties we shall be amply repaid by a better return for our time and capital than would be the case were the plants we have to grow taken without any, or but slight, discrimination. The variability of species is not confined to our plant-houses or gardens, but extends to the lawn and shrubberies—nay, to the primeval forest itself. The observant cultivator may everywhere note nature's "masks and faces;" and if wise, will turn this specific variation to good and useful account.

Those interested in Conifere must often observe the variation of such beautiful species as *Abies Canadensis*, *Cedrus deodara*, or the Chilian Pine, *Araucaria imbricata*. While inspecting the rich collection at Elvaston Castle some little time ago, the head-gardener, Mr M'Kellar, pointed out some striking forms or varieties of the above and other species. This variation, with regard to the last-named species, we have also observed in the collection of Lord Poltimore, near Exeter, South Devon.

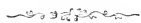
In the improvement of races great care and attention must be paid to the condition of the seed-bearing plant. The state of fruition in the vegetable as in the animal kingdom demands the highest possible state of health and vigour; and it may not be out of place to remark that debilitated or unhealthy plants, or such as by local causes are dwarfed or stunted in their growth, frequently produce enormous crops of fruit or seed. This is in many cases the last effort of expiring nature to reproduce herself, although the seed borne by exhausted plants seldom produces a healthy progeny: indeed, it is as reasonable to infer that a debilitated plant can never produce a vigorous progeny, as that consumptive parents never produce healthy offspring. This last remark will of course apply with equal force to cuttings and grafts taken from diseased or cankered plants or trees.

Many of our finest varieties of Camellias, Azaleas, and Chrysanthemums have been obtained from what are technically called "sports;" and in the first-named genera it is common to meet with bud-variation fully illustrated by white flowers being borne on coloured varieties, or *vice versa*. When these bud-variations are exceptionally fine, they may be in some degree fixed by grafting the portion of the branch affected, and thus perpetuating what, if left to itself, would in all probability have reverted to its original form. When we come to the aristocratic Orchids, we find this protean variability illustrated in the superlative degree; and it is here that the cultivator has full scope for his judicial powers of selection. Cattleyas are almost proverbial for their dissimilarity, and *C. Mossiæ*

and *C. Trianae* of all others sport into the most beautiful varieties imaginable. These, like the forms of some *Dendrobiums*, vary greatly, not only in the relative size, form, and colouring of their sepals and petals, but also in constitutional vigour and their season of blooming. This last interesting fact enables us to use our selective faculties judiciously in order to prolong the natural blooming season of each species; for if we select the extreme forms, or those which flower a month earlier or later than the common variety, then we have that species in bloom three months instead of only one—a result well worth attempting. Our desultory remarks are intended to be suggestive rather than directly instructive to the practical horticulturist, and the ideas here thrown out may form a nucleus around which those of others may cluster like the richly-laden Vine to the bare trellis, or refined gold to the earthen crucible.

F. W. BURBRIDGE.

FAIRFIELD NURSERIES, MANCHESTER.



WINTER-FLOWERING ORCHIDS.

LÆLIAS.

ORCHID-BLOOMS are welcome at all times of the year, but those seem to us most acceptable which expand during our dull wintry months. All flowers are beautiful; but there is an obvious superiority about Orchids in form, colour, and also in the crystalline delicacy of their finely-moulded sepals and petals, which is all-sufficient to raise them from ordinary or vulgar mediocrity to the superlative degree of floral beauty and excellence. Their glowing colours—and in many cases grateful perfume—increase their value for all kinds of ornamental purposes to which flowers can be applied, whether they are allowed to remain on the plants themselves, or are removed to grace bouquets, vases, or other floral decorations.

Lælias are among the most beautiful of all autumn and winter flowering Orchids; and their price, in the first instance, is not more than that of the rarer Ferns and stove-plants. The culture of most winter-blooming Orchids is exceedingly simple; and we feel surprised that they are not more generally grown wherever choice flowers are in demand during this festive season. All the species here alluded to—with the exception of *L. Perrinii*, *L. superbiens*, and *L. anceps*—grow best on blocks, either of virgin cork, or *Acacia* with the bark left on. Plants soon establish themselves on blocks; but they will require constant attention when making their growth with respect

to moisture at the root. The *Lælias* recommended for block-culture, I find, luxuriate with most vigour in a cool temperature and not over-moist atmosphere: just such a temperature as is found in most cool vineries suits them admirably, while the foliage of the Vines supplies all the shading that they require. In practice, I find that many *Lælias* and *Dendrobes* are greatly benefited by being placed in the cool airy atmosphere of late vineries, after they have made their season's growth. Here, in the diffused sunlight, they ripen their bulbs and throw up their flower-spikes, when they may be removed to the show-house or conservatory, to perfect their flowers. Of course, where there is the convenience of a Mexican house, these shifts will not have to be resorted to; but I am writing for those who have to do their best with ordinary plant-houses, and are ambitious of growing a few of these choice flowers to add to those obtained from stove and greenhouse plants.

We will now glance at those *Lælias* best suited to our purpose for flowering during winter, and append a few hints on culture under each species, as may be deemed requisite. I am of opinion that the best way of supplying information is by suggesting the mode of treatment, rather than by attempting to lay down any inflexible rule. In horticulture there are many ways of obtaining the same end: it is an art, not a mere series of mechanical operations which, if performed in due order, end in one invariable result. A course of treatment successful in one particular instance may not be applicable to the generality of places; but by supplying the intelligent horticulturist with suggestive information, he is in a position to work out the problem himself—far better, perhaps, than we could do it for him, being in ignorance as to his peculiar appliances, and other local circumstances beyond our control.

LÆLIAS ON BLOCKS.

L. acuminata.—This is an old-established favourite in our gardens, having been introduced thirty years ago from Mexico. It generally flowers during December or January, and lasts a fortnight or three weeks in perfection. The flowers are borne several together on a spike 12 to 18 inches long. Sepals and petals of the purest crystalline white. Lip white, with a rounded purple blotch in the throat. The inhabitants of Guatemala and Mexico call this the Flower of Jesus (*Flor de Jesu*), on account of its delicate purity.

L. acuminata violacea.—This is a distinct variety of the above, having flowers of a rosy violet colour. It occasionally occurs among imported plants of *L. acuminata*, but is not common in collections.

L. albida.—Another old inhabitant of our gardens, introduced from

Guatemala in 1838. In habit this plant approaches *L. autumnalis*. Flowers three to seven on a spike 15 to 18 inches long, produced in great profusion on well-established plants. Sepals and petals of a semi-translucent white colour. The lip has a bright lemon-yellow centre, and is dotted with bright crimson near its base. It flowers during the dullest winter months, and lasts three to four weeks in perfection. Its flowers open rather greenish, but eventually change to white, and are very useful for bouquets, or other floral ornaments.

L. autumnalis.—This is one of the finest of winter-flowering Orchids, bearing three to five flowers lightly poised on the apices of slender spikes or scapes, which vary from 2 to 3 feet in length. Sepals and petals of a glistening or crystalline appearance, and of a rosy violet colour, darkest towards the margin. Lip white, with a crimson-purple apex, having a tri-lamellate crest. This plant flowers freely during December and January, lasting three to four weeks in beauty. A fine specimen-plant of this species exists in the collection at Manley Hall, near Manchester. This plant has been grown all the summer in a lean-to vinery, and has thrown up twenty-three flower-spikes, some of them being very strong. It is growing on a large block, and is a good example of what may be done with winter-flowering *Lælias* when they are well grown.

L. purpuracea.—This is another fine old species, introduced from Mexico about 1838. It is often confounded by cultivators with the last-mentioned species, but is very distinct. It bears one or two flowers only on the apex of a scape 10 to 12 inches high. The petals are very much broader than the sepals, and the flower in general conformation reminds one of a *Phalænopsis*, or of the rosy-flowered *Dendrobium bigibbum*. The flowers are not so delicately perfumed as those of *L. autumnalis*. It flowers in December, and lasts a fortnight or three weeks. It is by no means a free-flowering species, but one worth adding to any collection.

LÆLIAS IN POTS.

L. anceps.—Introduced from Mexico nearly forty years ago, this plant remains a distinguished favourite in nearly all collections. It grows freely in the Cattleya-house or in an ordinary plant-stove, and rarely fails to reward the cultivator with a rich profusion of its crimson-purple flowers. It bears three to four blooms, each being 3 inches across, on the apex of a slender two-edged scape 2 to 4 feet long. The lip has a yellow streak down its centre, and the apex is of the richest velvety crimson colour. This plant grows well in fibrous peat and living Sphagnum, a few lumps of charcoal and crocks being interspersed to keep

the compost open. It requires an abundant supply of moisture when growing.

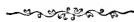
L. anceps Dawsoniana.—This is a lovely variety of the last species, from which it differs chiefly in having creamy-white sepals and petals, and a rich bright purple blotch on the apex of its white labellum. It is rare in collections, but one of the most strikingly beautiful of all Orchids.

L. Perrinii.—This plant resembles the Cattleyas in habit, and has purplish, club-shaped, pseudo-bulbs, slightly compressed and distinctly furrowed. Its rosy-purple flowers are borne four or five on a spike about 8 or 10 inches long. The lip is three-lobed, and has a rich velvety crimson apex. It generally flowers during November or December, and lasts a considerable time in beauty. It grows remarkably well in an ordinary plant-stove having a mean winter temperature of 50°; and well-established specimens produce a rich profusion of flowers.

L. superbens.—This is an old plant introduced from Guatemala some time about 1840. It has long, thick, spindle-shaped bulbs, each bearing a couple of stout leathery leaves about 1 foot long. It throws up its great flower-spikes about October, but it takes them a long time to develop themselves, and their flowers expand in December or January. The flower-spikes frequently attain a length of from 5 to 10 feet, and bear at their apices ten to twenty flowers. The most striking colour of the flowers is bright purplish-rose, but there is also a combination of white, crimson, lilac, and yellow intermixed, the *tout ensemble* being very fine. This plant does well in lumps of fibrous peat and nodules of charcoal and crocks, and it does not require a high temperature in which to grow it successfully. A fine specimen of this plant once existed, for a considerable time, in the old Orchid-house at Chiswick, merely suspended from the roof, without any compost whatever.

We cannot well include *L. majalis* in our list of winter-flowering species, for though it grows well on a block in the temperature recommended for *L. autumnalis*, still its flowers are not produced until it commences its growth about April or May. It is the May-flower of the Spanish Americans (*Flor de Mais*), and is one of the most striking species in cultivation, though likely to be rivalled by the newly-introduced *L. Jonghenna*. With these few remarks, we leave the winter-blooming *Laelias* to the attention of our readers, and shall again recur to other winter-flowering Orchids as opportunity occurs.

F. W. B.



EARLY CAMELLIAS.

WITH much pleasure and satisfaction many will have read our Editor's leading article in the December issue of 'The Gardener,' headed "Camellias for Autumn Flowering." In a measure to corroborate or strengthen his remarks, I beg to instance two cases in my own experience of flowering Camellias early. The first that occurred was in the summer of 1871. How this was accomplished I shall now endeavour to describe. In the autumn of 1870, I had two large Double Whites in the collection under my charge. These plants dropped their buds—a cause of disappointment to my employer and annoyance to myself, as we depended principally on them to supply white blooms at New Year time. These plants, along with some others, were partially shaken free of the soil in their pots, and were put into pots containing pure light but rich fibry loam, with an unusual quantity of broken pots put into each pot; the soil was pressed extra firm with the hands without other aid. The plants were potted on one of the latter days of December, and at once plunged in bottom-heat in a stove where the average heat was 80° in the bed, and 60° in the air. The roots were deluged with tepid water twice a-week, and their branches syringed twice daily. Very soon both roots and branches began to push strongly, which growth was encouraged by stimulants of very weak guano waterings. At intervals water was supplied copiously when they required it. By the end of February flower-buds had formed, and they were shifted from the stove to an early vinery, where they remained for the two succeeding months, the mean temperature of which was a few degrees below that of the stove, but was ultimately raised as the season advanced, and as the requirements of the vines demanded. From the vinery we moved them in the first week of May into a Peach-house for a month, then quartered them out of doors. Throughout all these stages I cannot say that I discerned any great cessation take place in the swelling of the buds, although their progress before the final swelling was certainly not so visible outside; and inside they continued to swell and demand more water, which was copiously supplied as soon as the surface of the soil indicated dryness.

The thinning of the buds was performed on three separate occasions, two buds being left on the strongest, and one on the weakest growths; and by the end of June, one of the plants showed symptoms of opening its most advanced buds, when I had it placed in a greenhouse: so I had a beautiful flower on the 1st of July, which was used for the centre of a bridal bouquet. The most advanced flowers continued to meet the wants up to the 8th of September, when the two plants, fully 4 feet through, loaded with model blossoms, were selected for exhibition—one to figure among fifteen stove and greenhouse plants, and the other in a group of greenhouse plants. First prizes were awarded to both groups, Mr Wm. Thomson of Clovenfords Vineyards, and other eminent judges, officiating as judges on the occasion. Those plants, after standing under canvas for three days and five nights, were brought home, and unceasingly flowered on to the latter end of November.

The other instance we propose referring to is that of an exceedingly large Double White—to say the least, absolutely bending beneath the weight of its hundreds of buds and flowers. This plant furnished its first flower on the 14th of September, and we have cut daily from it ever since, sometimes as many as a dozen at a time or in one day; and I have no fear but we shall have its daily offerings of grand flowers for the next two months to follow.

What remains to be said is in reference to the quality and duration of such early flowers. I think, with our Editor, that they are improved in every respect;

more perfect flowers could not be desired than the majority of the flowers produced within the past six weeks by the plant now referred to. As to their lasting qualities, this property is so much enhanced, that they will cling to the plant for a month after the flower has opened, and latterly require to be removed by the hand when far advanced in decay.

A. KERR.

30th November.



THE AUTOBIOGRAPHY OF A GARDENER ;

OR, LESSONS FOR THE YOUNG PROFESSIONAL.

I AM afraid I have undertaken a work which my limited abilities will leave but imperfectly executed. The natural question, then, will arise in the mind of the reader, "Why attempt a voluntary performance to which you confess yourself unequal?" I reply, "Scribblers like to see themselves in print, and men of mediocre attainments fancy too often that they ought to be teachers where they should be but students." It is in vain that the rough handling of the critic exposes their weakness ; their rhinoceros-like hide renders them impervious to his attacks. It is not sufficient that their fame should be eclipsed ere their assumed light had fairly been kindled. It is not sufficient that dearly-bought experience should be gratuitously placed before them ; for, like the moth, they must again and again have their wings singed with the flame ere their literary fame finally perishes in their own mad wilfulness.

There are a few honest writers whose powers are unequal to their desires, one of whose objects of life seems to be to benefit in some way their fellow-creatures, but whose mental capacities do not enable them to write with the terseness of a Macaulay, with the varied knowledge of an Alison, with the natural touches of a Shakespeare, with the predictive power of a Cumming, or the convincing eloquence of a Chalmers,—whose limited education prevents their writing with the smoothness of a Demosthenes, or in the heroic style of a Virgil, or with the satire of a Juvenal, or the sonorous sweetness of a Horace, and yet who desire to say something in a homely practical way for the benefit of their fellows—who desire to speak from the mining-depth of their own experience in language which shall at least be intelligible to their readers, if not poetically affecting or literary-inspiring. Such a one the author of the present papers professes to be.

SCHOOL-LIFE.

Who can forget the time (I am speaking to the advanced in age) of his ancient school-life purgatory ? Methinks I now see the mottled desks, rich (to the boys' eye) in carvings. Monograms, ornamental devices, and autographs were there ; memorials of some who, it may be, have since attained eminence in arts, sciences, literature, or politics—of some who have served their country in danger, and have lost their lives in battling for king and fatherland, hearths and homes—and of some, alas ! who have stained the annals of our history with moral delinquencies and flagrant crime. The little world of school-life contains the germs of future power or weakness. The lessons then inculcated, and the impressions then made, model the future man. How important, then, that the principles instilled there should be those of the strictest morality, based upon the everlasting foundation of truth, as discovered in the Book of books ! How important that the mind of the future Englishman should be trained to independence, courage, honesty, and truth in the school-room ! But I am wandering from the picture

which presents itself to my mind's eye just now—viz., the venerable form of the village teacher, my tutor, the great writing-master of the district, whose calligraphy was executed with mathematical correctness, whose hair-strokes were scarcely perceptible to the naked eye, and whose swellings of the other portions of the letters were so artistically wrought that they appeared faultless in proportion if not graceful in outline, whose flourishes were of that copperplate character which amazed the wondering tyro, and impressed him with reverence. We may smile at all this; and yet we must bear in mind that although we have gained much of late years by the introduction of physics and chemistry, conics and analysis, German and Hindostanee, into our educational establishments, our youth have lost much of the freedom and boldness of writing which characterised the generation I am now speaking of, and which is essential, let me add, to every would-be gardener. A plain legible handwriting is one of the first points to be aimed at by him who would be the skilled designer of a landscape, or the nomenclator of a fruitery, or the indicator of botanical knowledge. Despise not little things; they make up the substance of life—they are the components of our every-day being.

A necessary companion of my worthy pedagogue was a tree of small proportions, but pliant in the hand, and which had the facility, moreover, when skilfully used, of producing a smart without fear of thereby causing its own destruction. It would bend without breaking. Those of my young friends who may read this, may naturally like to study the botanical characteristics of this little offset of nature, which is popularly called the "ground ash." Although this then considered indispensable instrument in the formation of character, and in imparting the rudiments of education, is now very properly considered a brutal remnant of bygone ages, I cannot but feel that there was a discipline in the "good old times" of which I speak (whether attributable to Solomon's sage maxim of not sparing the rod or not, I will not presume to say) that is lamentably deficient now. I am afraid that apprentices nowadays would be inclined to rebel against the fancied hardships I endured then; and certainly the tender mother and over-anxious father would not now subject their beloved offspring to the now would-be regarded cruelty I then experienced: yet I know not how it is, but we seem to have been a more hardy race then—our powers of endurance seem to have been greater, our enjoyments more natural, our pleasures more hearty.

The special object I have proposed to myself in this paper, however, is not so much to indulge in reflections upon the past, or in comparing the things which have been with those that are, or with those that may be, as to indicate what I believe should form the curriculum of studies of him who is to be a practical gardener—to show how his spare time may be most profitably and pleasantly employed in contradistinction to what we fear it now too frequently is—to point out the evils consequent upon the self-estimated importance of the present young man—to direct him to what should be the ultimate and legitimate end of his ambition, and to refer to some means by which he may attain that end—to lead him to look beyond the limited circle of the present to the termination of the vista of his human career—and to direct him how to gather, as he goes, flowers to brighten his path, fragrance to cheer him on his journey, and fruits to stimulate him in the pursuit of his laudable determination.

To pursue my history. I left school with a fair smattering of useful knowledge. I could read well; indeed it was said of me that I could "read like a parson." In reflecting upon this sage and discriminating remark now, I cannot feel sure whether it could, have been intended as a compliment or expressed as a sarcasm. I could write legibly (which, by the by, is more than I can do now). I

have written a good deal since that time (how readily an excuse crops up for a neglect of duty! a stable article of commerce this!), and the rule "practice makes perfect" (I admire the alliteration here more than the grammatical construction) seems to have been reversed in my case. If, Mr Editor, your powers of divining the meaning of what I have written, and consequently of expressing in type correctly, be not greater than my facility in writing, this article will serve as a useful orthographical exercise similar to the one my poor young brain was tantalised with when I had to convert some eccentric-looking word, full of x's or j's it may be, into some other form conveying some rational idea. I do not know whether it was this orthographical exercise-book that improved my spelling or not, but certainly I was very clever in mastering orthographical difficulties at a very early age. I am rather inclined to think, however, that it was from the habit of reading much—of reading *to* people—and of writing out important or striking passages in a scrap-book, that I may fairly attribute my proficiency in this respect. Spelling is doubtless learnt by the eye; and I cannot consequently think that the placing incorrect forms before a pupil is a mode likely to convey accurate and lasting expressions. Here, then, I have indicated three points for my young gardener's attention—he should be able to write well, read intelligently, and spell correctly.

I will now briefly point out how I supplemented my meagre school education. Although, let me tell you, I was sent regularly to school from the age of about four to fourteen, to the best fountain of knowledge in the village, yet my knowledge at the end of the period was limited to imperfection in the three R's. I was a precious dunce, observé, at that time; and my friends even now do not hesitate occasionally to remind me of my stupidity. Before I proceed, however, it occurs to me that I should tell you a little of my early personal history, that you may perceive what a *good* boy I was if a *stupid* one. My father was a very respectable man—what the world would call a gentleman, what I should say *poor* but *proud*. He had a farm, but his ideas connected with farming were certainly very crude. He could discuss the articles in 'Bell's Weekly Messenger' (his regular companion), but could not handle a plough, nor teach a man how to make a ridge. He had a large garden, and his ambition was to pick the first handful of unripe Peas, or pigmy Kidney-beans, or marble-sized Potatoes. I was consequently early initiated by my grandfather (who was living retired in a comfortable little box near, and who rejoiced in the acknowledged position of the first amateur gardener in the district) into the mysteries above alluded to; and here as a boy I spent my spare hours. I managed to save out of my pocket-money and presents from three to four shillings a-week (a large sum for a boy, you will say); but I worked hard for it, not for the love of the money, but from genuine interest in the work: most of this I spent in flowers and periodicals. My mother was a florist, and consequently tolerated my boyish extravagance. The nearest nurseryman and bookseller might well have wished that all the neighbouring boys of my age had been equally fond of gardening, and had been correspondingly well furnished with funds. I had the finest collection of Fuchsias, Geraniums, Dahlias, Carnations, and Auriculas in the district. I grew the earliest vegetables, and gathered the primest fruit. I must be a gardener—I was a natural-born one; and I was accordingly apprenticed in the gardens of a sister of the present Earl Russell. So here I am at length commencing a career full of hope—the pet pupil of the clergyman's sister, the bosom friend of a neighbouring solicitor's son, the *protégé* of a noble lady, but, alas! the pupil of one who little understood my openness of character, and honesty of principle, and independent character. Jealousy sapped the foundation of my hopes: he who should have been my instructor proved a

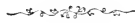
drawback to me ; he who should have been my friend proved my bitterest enemy. My young friends, I say this to caution you against being too sanguine about anticipated results, and to warn you against what you will be sure to have to encounter if you aim at making a mark in the world—the jealousy of mean-spirited mediocrity. And now I will briefly tell you how I endeavoured to supplement my school education. In the garden was another apprentice about twenty-four years of age ; I was about fifteen. Four garden-men ; one old man, a weeder, and two garden-women,—this was the regular staff. Additional men were set on, of course, as required. This is how I improved my reading.

Picture to yourselves an old shed about 7 feet high, 10 feet square, with one small window. There were several fireplaces for the vineries coaled from this shed—all flues then. Coal packed at one end of the shed, and a short form where one could be introduced formed our dining-room chairs ; our laps were our tables. I at first boarded with the head-gardener, until, as I told you before, jealousy roused his ire, and he then found it was inconvenient for me to continue longer in the house. It was so much additional work, indeed, for his wife and servant, although, dunce as I was, I used to assist his son, a little younger than myself, in his school lessons. Well, it was a good thing, perhaps, after all. How unable are we to calculate upon the effects of little things ! How little do we know whether, when we cry out like Jacob of old, “all things are against me,” they are not really working for our good ! To proceed. At our breakfast and dinner hours, when the scanty meal, in the rustic manner I have described, was despatched, you might have seen me elevated upon my coal pulpit, and reading, at the request of the men, to them from Maw and Abercrombie, or from a new serial publication of the time, the name of which I now forget. This reading was varied with the continuous perusal of Doddridge’s ‘Rise and Progress of Religion in the Soul,’ and when that was finished, with Baxter’s ‘Saints’ Everlasting Rest.’ These latter readings were specially given at the request of the old men ; and vivid is the picture now before me of the frequent streaming eye and gurgling moan as my youthful voice poured forth balm to aged breasts. Well has it been said that the best way of retaining knowledge is by imparting it to others. Valuable knowledge I gained in this way, then, which has had a powerful influence upon me through life. Improvement in the art of reading I made then, without for a moment suspecting that I was benefiting myself. And this is the lesson I would have you to learn : “Go,” as opportunity is afforded you, “and do likewise.” But how was my orthography improved ? Why, in the first place, I believe by this very exercise in reading, but in perhaps quite as great a degree by the following exercise I prescribed to myself. I know not what led to my adopting it, but I should imagine the following was somewhat instrumental : In reading to the men, I was naturally asked the meanings of certain terms used ; and I daresay, regarded as I was as an oracle of wisdom and knowledge, self-pride led me to endeavour to avoid showing ignorance before my worshippers. That little insinuating, vanity-supporting, yet ignoble feeling of arrogating to yourself what you must know you do not possess, or accepting the homage of the Lystrians of a godhead blasphemously ascribed to you—how common to the little-minded spirit of man ! Well, I suppose it was some such feeling as this which led me, after my returning from daily work, to go to my bedroom (I had no private study), and there, with dictionary in hand, or other book of reference I may have possessed, to discover the meanings of difficult or scientific terms in forthcoming daily readings, and having discovered them, to enter them carefully in a memorandum-book provided for that purpose. Thus you see several objects were gained by this self-prescribed course of study : I must read thoughtfully ; I must read understand-

ingly ; and what I was ignorant of must be discovered. I was led to accuracy of expression. I was practically taught the art of condensation ; for of course I had no desire to spend unnecessary labour in my general education. I learnt the meaning of a large vocabulary, and writing the words down correctly was of course an orthographical exercise for me. These, then, were the two principal supplementary methods by which I learnt to spell correctly. Here I must observe that many years of experience have convinced me that no surer way of attaining so desirable an accomplishment (if I may so term it) as correct spelling is possible. It is a natural process ; and everyday experience confirms the usefulness of the practice. I know a young man who was employed as an errand-boy in a solicitor's office who had no education, but who, having by his perseverance conquered the art of forming his letters, was gradually employed in copying in the office, and who by this means became an accurate speller. By the same process, moreover, a good business-hand is readily attained ; for as you would write with accuracy and legibly, you must necessarily at first write slowly and carefully ; and so the preliminary groundwork in a gardener's mental education is slowly but surely established.

[Will the writer of this kindly favour us again with his address--which we regret having mislaid--as we wish to communicate with him.—ED.]

(To be continued.)



CLIANTHUS DAMPIERI.

IT is a well-known fact that this fine Australian creeper is bad to manage on its own roots, being very impatient of water, and liable to damp off, especially in dull weather. Being anxious to have some specimens of this most beautiful Clianthus, it occurred to me that by grafting it on some of the less delicate varieties we might have better plants. Last July I grafted this Clianthus on a very strong-growing variety, the name of which I do not know. The result is very satisfactory ; and I would recommend those who have a difficulty in growing this plant well to graft it on Clianthus puniceus, or any of the other varieties, and I am sure they will not be disappointed in having good plants, either trained in the balloon shape for pot-culture, or planted in the border of an intermediate house. The mode of grafting is very simple and effective. The stock and scion being both in a growing state, but having just acquired a woody consistency at the part to be operated on, an oblique cut is made on the stock, and the scion being made in the form of a wedge, so as to fit the incision as exactly as possible, the part is then tied up with a piece of matting. The plant may then be put into a moderately warm, close, and shady place, and in the course of three weeks or a month the scion will begin to grow, after which the top of the stock may be cut off down to the part where the union has taken place.

RICHARD.

THE GREAT VINE AT HAREWOOD.

I SAW this fine old veteran about the end of November, and as some particulars about it may be interesting to your readers, I may say a few words about it. The Vine is a Muscat of Alexandria, though I believe it is called a Tokay. It is nearly 100 years of age, and is still in excellent health and bearing condition; and it is a noteworthy fact that Mr Fowler cuts Grapes from it every year till late in spring. Indeed, it is the late vinery at Harewood. When I saw it at the above date, the Grapes were just beginning to be cut, and there were then hanging on the Vine about 450 bunches, equal perhaps to about 400 lb. weight—all clean and highly finished, and like amber in colour. The house, which has been once added to, is 70 feet long, about 20 feet wide, and very lofty. The Vine enters at the front near the centre of the house, diverges right and left, and the bearing-rods—or rather bundles of rods—are taken up the roof about 2 feet apart. About a dozen years ago or rather more, Mr Fowler undertook the responsibility of lifting this aged giant, as it did not bear satisfactorily and the fruit did not keep. The operation was completely successful, and since then the crops have been uniformly excellent, and the fruit keeps till March. Last month I had something to say about the temperature of forcing-houses, and I may just note here that Mr Fowler treats this Vine to a considerably lower temperature than is considered necessary for Muscats. If I recollect aright, there are only 4 rows of 6-inch pipes in this large house, and they are anything but well placed for giving off heat; and Mr Fowler assured me that he did all in his power to keep the crop back by ventilation and otherwise, and a low night temperature. In proof of this I may state that no leaves had fallen off the Vine at the end of November; but they were just beginning to fade into that natural yellow colour which indicates that there has been no hurrying. On the whole, it was the finest show of Muscats I have seen this year, and well worth a long journey to see.

J. S.

**HINTS FOR AMATEURS.—JANUARY.**

PRUNING, nailing up shoots to walls and fences, clearing off moss from bark of trees, lifting and replanting bushes, are some of the important operations when weather is mild; but we would neither plant nor prune during frosty weather. A mixture of lime, soot, and clay makes a good paint for bushes when infested with moss, or when birds feast on the buds. Fork manure over the roots of stunted trees and bushes if lifting cannot be practised. Save prunings of Gooseberries

and Currants for young plants, a stock of which should be kept in some corner on every place, as bushes are liable to die off occasionally. When pruning is done, branches should not be left crossing each other, but kept clear and upright—cutting out a portion of old wood to be replaced by new. Always prune so that sun and air may have free access to the fruit.

Alterations may be carried forward in the pleasure-grounds when weather will allow. Turf may be laid, Box and other edgings may be repaired or made new, old shrubs grubbed out or cut down, if worth leaving to spring again. Deciduous trees may be planted, but ever-green shrubs may be left unplanted till they are about to start into new growth in spring. Mulching and staking should have attention with newly-planted shrubs. Level and gravel walks; turn those where it can be done. Leaves may be forked in over the roots of shrubs where free growth is wanted, but the roots should not be injured. Cutting of Laurels, Privet, &c., may be done when weather is severe.

Let trees and shrubs have early attention after snow has fallen heavily, otherwise much damage may be done if the trees are not shaken. Every part of the grounds may be kept clean and orderly, and worm-casts taken off. Waterings of lime-water will keep worms from working, if it does not reach them to destroy them. Old wasted soil may be removed from flower-beds, and turf added. The advantages of deeply-trenched beds will be experienced in summer, if the weather should be of either extremes of wet or drought.

Bulbs may require protection—they will bloom all the better for it. Roses may be planted and mulched; deep strong soil suits them. Tender kinds require protection in severe weather. Secure a good stock of Briers for budding on; plant them in rows, to be ready when the season arrives. Shrubs for forcing should be lifted some time before they are wanted, and kept under protection; force them gently at first, and whenever their buds begin to open, plenty of air must be given. Camellias in flower require plenty of water—a close damp atmosphere is against them when in bloom. Keep foliage sponged with tepid water when necessary; dirt on plants should never be tolerated. Hard-wooded plants must have fire-heat applied continuously, and always have fresh air when it can be given with safety: a temperature of 40° is safe for greenhouse plants,—a damp stagnant atmosphere would soon do much damage. Water at the root with great care, giving enough when required, but dribbling the surfaces will lead to ruin: drenchings of cold water at this season soon do mischief. Use tepid water for all plants, and manure-water in a weak state for Cinerarias in flower. Primulas in flower require plenty of air: a damp close atmosphere causes rotting at the neck. A portion

of those which have flowered early and are healthy should be kept growing, to be lightly shaken out and grown on for early work next season. Pelargoniums should be kept growing slowly, and water withheld as much as possible for some time. Give plenty of air to prevent spotting. Sweet-scented Pelargoniums should be grown in quantity. Poinsettias should not be kept damp when flowering; cold draughts soon put an end to their beauty. Look well after those which have flowered; and when time arrives, cuttings may be had—cutting down old plants for early work. Chrysanthemums when done flowering should have their flower-stalks cut off, and the plants encouraged to make cuttings, and be fit for dividing: nothing in pots, however hardy, should be exposed to frost.

Bedding-plants should be kept free from decaying leaves, keeping all surfaces stirred. Fresh air should have free course when it can be admitted; frosty winds would do much damage. Never use fire-heat if it can be avoided. Shut up early to harvest sun-heat. Keep Auriculas dry, air carefully, take away any decaying matter when it appears. Keep moss and weeds from all surfaces; prevent drainage from being stopped up; slugs may do much damage if not seen to in time. Lily of the Valley and bulbs in pots must be kept from frost: take supplies into gentle warmth as required. Bulbs done flowering may be saved for planting out. M. T.



FIG-CULTURE.

NO. IV.

Forcing and General Management.—There is perhaps no other fruit-bearing plant that submits with greater freedom and success than the Fig to early forcing, and it certainly yields under favourable treatment a very good return in the shape of two crops of fruit annually. In some cases it has been made to produce a third crop by commencing to force early, and prolonging the process late in the season; but although this is possible, it is by no means desirable, for, besides the debilitating influence on the plants, the third crop is never fine in quality.

Where a regular succession of ripe Figs is required from April to November, I recommend that there be a set of plants in pots, and another planted out, as has been treated of. Those in pots should be started about the new year, to ripen their first crop in April and May, and their second in July and August. Those planted out in borders, if started the end of February or beginning of March, ripen their first crop in the end of May and June, and their second will be all gath-

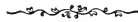
ered before the middle of October, thus keeping up the supply of ripe Figs for at least six months of the year.

In beginning to force those in pots at, say, the beginning of January, it is very desirable that they be supplied with a gentle bottom-heat. Although this is not absolutely necessary, yet they start more freely into growth, the young fruit is less likely to drop off, and it swells better with than without bottom-heat. A house or pit in which Figs can be thus early forced, **may** be, and generally is, used for other purposes besides. In some cases early Strawberries are forced along with them on shelves on the back wall near the glass; a pot-Vine is fruited on each rafter; and in others all these three fruits are forced in the same house. But there is no doubt that where circumstances admit of their having compartments to themselves, they can be forced with less trouble and more success.

Temperature, Watering, &c.—As in early forcing of every description, a lean-to light house, with a good command of both top and bottom heat, is best for Figs. If leaves can easily be got, it does not matter much whether the bottom-heat is wholly derived from a bed of them of considerable depth, say $3\frac{1}{2}$ to 4 feet, or from a lesser quantity in conjunction with hot water circulating below them. So long as a bottom-heat of about 75° can be maintained, it does not matter much which system is pursued.

Supposing that a set of pot-plants are at command in a well-ripened and fruitful state, and that ripe Figs are required by the end of April, by the 1st of January they should be plunged to the rim in the leaves. If there has been any red-spider on them the previous year, let the shoots be well washed with a soft brush and water, and then painted with a little sulphur, soot, and clay, well mixed together in water. Remove any loose soil that may be on the surface of the balls, and replace it with loam and horse-droppings in equal proportions. In plunging them, give them sufficient room to allow the leaves and young growths to expand without crowding. Give a good watering of water at 80° . See that the bottom-heat ranges about 75° , and that the night temperature is kept steadily at 50° , with an increase of 8° or 10° by day, till they show signs of growth, and the young fruit have begun to swell. Then raise the temperature to 60° at night, with a corresponding increase by day. Give air freely on all favourable opportunities, and syringe the trees morning and evening with water a few degrees warmer than the atmosphere of the house. After the young fruit get to the size of nuts, over-syringing must be avoided, especially in dull weather, as an excess of water at the root, in conjunction with a too free use of the syringe, has a tendency to cause the fruit, especially in dull weather, to become yellow, and drop off

before the setting process is past. At the same time, avoid an arid atmosphere, or a check from want of water at the root. Either extreme must be avoided until it be seen that the fruit are out of danger. But with well-ripened wood and bottom-heat, the fruit are rarely lost. As soon as the young growths have made four or five joints, pinch out the terminal bud, and increase the temperature to 65° in mild weather. When the second crop has fairly shown itself, feed the plants liberally with manure-water, as there is then a great demand on the energies of the plant. Manure-water made from sheep's dung and soot, should be given in a weak clear state every alternate watering; or guano, at the rate of a handful to a large garden watering-pot of water, answers well.



DINNER-TABLE PLANTS.

THE great demand for plants on the dinner-table now, makes all who have a large and regular supply to keep up all the year anxious to get possession of anything likely to be of service. Having proved a few of those sent out since last spring, a short notice of some of those I have found most useful may not be out of place in 'The Gardener.'

The Crotons have always held a high place in this department of decoration, and from the fine varieties sent and to be sent out, they have every appearance of still holding their ground.

C. Johannis.—This is a beautiful plant in every way, so graceful in habit, the leaves drooping so light and free; when well grown in a 6-inch pot, it will not be easily excelled on the table. It is after the style of *Angustifolium*, but longer in the leaves, being of a glossy green colour, the centre and margin bright yellow orange.

C. Hookerii.—This is another good plant. It appears to be a more compact grower than the former. The leaves are large, lanceolated; the upper surface dark green, the midrib being yellow, with the same colour running out to the margin.

C. undulatum.—This is thought by many the best of them all, and either for table or exhibition purposes it will undoubtedly take a high place when plants get large. In its younger stages the leaves are nearly yellow. As they get older and are grown in strong light, they get bright green, irregularly marked with bright crimson, the edge of the leaves being beautifully waved.

C. Veitchii.—A strong grower, having large broad leaves, beautifully marked with green, yellow, red, and purple. From my experience of it, it will soon make a large specimen—quite distinct from any of the others.

C. Wisemanii.—This I consider a grand thing for decorative purposes, free grower, the leaves long, narrow-striped and mottled with gold, very bright. The leaves are from 10 inches to 1 foot long, and over an inch wide, the upper surface shining green, with gold blotches, the midrib and margin golden yellow. This and the first named will be the best I know for decoration in small pots.

Dracana Dennisonii.—This is a great acquisition, being of a dwarfer growth than many of the older sorts. The leaves are from 12 to 15 inches long, about 4 inches wide, dark bronzy colour. When set in silver or gold vases it is very effective.

D. magnifica.—This is a stronger grower than the preceding, the leaves being more erect—near 2 feet long, and 8 inches broad. When young, the leaves are a bronze colour, changing as they get older to a darker shade. It is a first-rate variety.

D. Maclaeyi.—Very dwarf, but stiff and robust in habit. The leaves about 18 inches long, 3 inches broad, of a dark-bronzy hue, with a metallic gloss over it. This in candle-light is one of the most effective of them all for table decoration. Being dwarf and compact, it can be grown in quantity in little space. It should be in every collection.

D. Guilfoylei.—This, although not new, deserves a place where variety is wanted. When fully exposed to the sun, and a little aged, there is a stripe of creamy-white the entire length of the leaf, getting a rosy tint at the edge.

Pandanus Veitchii.—One of the best table-plants of recent introduction, surpassing all the other Pandanuses. The leaves are serrated, light-green colour, with lines of pure white, and curving gracefully. Although our plant is small, it has all the appearance of being a plant that will be much sought after. With liberal treatment a nice plant can soon be got fit for the table. A compost of half peat and fibry loam, with a good dash of silver-sand; plunge in a nice brisk bottom-heat, with plenty of moisture in the atmosphere of the house, removing it some time previous to a temperature a little drier, if to be used for decorative purposes.

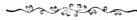
Paulinia thalictrifolia.—This fine plant at a distance and first sight would be taken for a variety of Maiden-hair Fern, being of slender growth, producing leaves freely which resemble the Maiden-hair Fern very much. The old leaves are of a bright green; while in a young state they have a beautiful rose tint. Grown well, as shown at Birmingham last June, it cannot fail to become a great favourite as a table-plant; it will also be useful for cutting from. From the short experience we have of it, it appears to delight in a humid atmosphere, with plenty of drainage and rich porous soil, when it grows very fast.

Lomatia elegantissima.—An elegant fern-like plant of free growth; thrives well in an intermediate house. When in too great heat it is apt to run up and get too high for table: when about 16 inches high, and furnished to the pots with its fine-cut foliage of deep green, it is very effective at night.

There are many more of recent introduction which I have no doubt are as good as those mentioned; but these we can speak of, having them all in use here.

There are a few Ferns and other things useful for table which I may at some future day send a few notes on.

A. H.—T.



UNDER - GARDENERS.

YOUR correspondent Mr Temple's remarks on this subject are kindly, temperate, and suggestive; and regarding the teaching of young gardeners, and the responsibilities of master-gardeners in their way, I would add a word or two. I consider that when the master puts his young men in the way of acquiring a good practical knowledge of their work as operatives, affording them at the same time what information and teaching his convenience allows, his interests demand, and their own good conduct and promise encourages, his duty as schoolmaster ceases.

No man of such a practical turn of mind as Mr Temple can be long in discovering, that attempting to teach some youths is like throwing pearls before swine. I am not disposed to think unkindly or ill of the rising generation—far otherwise—nor do I wish to say anything they may not read with advantage; but I would view the matter in a simply practical light, as it affects gardeners and gardening. Looking at both head and under gardeners as ordinary mortals, but with special reference to the latter, and taking things as they exist, how does the matter stand? and what are the most likely means of insuring success that present themselves to those who would avail themselves of such? The first and most essential thing for a young man to be is an efficient workman, and to be civil and good-natured. These qualifications are a passport to success in themselves, and such a man is simply a prize and a credit to himself and his master, who, he may be sure, will not be long in discovering his abilities and appreciating them. Intellectual ability is not to be overlooked; but mere *cleverness* or intelligence is not likely to stand any one in good stead long, if he cannot handle the spade or the hammer in a tradesman-like fashion at the same time, and shows no aptitude or disposition to do so: such men are likely to be treated with scant ceremony, when they come to be measured alongside their compeers. I am not an advocate for employing more journeymen and apprentices in a garden than are absolutely needful, finding permanent labourers in every way better; but where a number of young men are employed, the law of "natural selection" comes into operation at once. It does not matter what the master's inclinations are about giving all an equal chance: he has got the work to perform; the responsibilities are his; and he is forced by sheer necessity to put the best man first, if merit was no motive, and let the others take their chance. Hence there are always some who think they are being overlooked, and instead of trying to do better, they

sulk, affect independence, lose interest in their duties, and in the end have to go. As Mr Temple says, promotion according to merit is not generally enough kept in view. It is nothing less than an injustice to treat the good and indifferent alike; and if merit had invariably its reward at the hands of master-gardeners, beneficial results would soon be generally apparent, and empirics would be less common. There are numbers of youths calling themselves "improvers," or "journeymen," who enter a garden apparently under the conviction that they are to be turned out gardeners, as out of a mould, without the slightest effort or exertion on their own part. We have now and then had to do with such examples—creatures who dabbled at their work as if they had been bred to the tailoring or apothecary business: who could not write the name of the commonest plant or vegetable correctly from dictation, nor be trusted to put together the vegetables for the kitchen without mistake, and yet never felt it a duty to themselves to open a book in quest of the knowledge they so much needed, though every book necessary for them to read was found ready to their hand, free of cost. I daresay we must expect to meet with such men in the ordinary course of things, but they are only fit to rank as labourers, for they never make workmen or gardeners. The ordinary garden labourer, though he has little more than a day's interest in his work, gets through it conscientiously as a rule, and does it fairly, expecting nothing but his wage, and giving little trouble to his master. But while expressing little sympathy with such unworthy examples as we have described, it affords us pleasure to speak of good men who are still to be found for the seeking—sometimes where least expected. More than once we have turned a gardener out of a labourer who showed he had got the right stuff in him. One of the best men we ever had came straight out of a coal-pit, but he took to gardening like a fish to water, and was a better man in twelve months than some are in as many years. He was one of those men who knew how to adhere to "orders" strictly, without thinking he exceeded his duty if he went out of his way (on his own time perhaps) to tie up a plant that had broken loose from its fastening, or remove any unsightly object that might be in the way. We have often known such simple but thoughtful actions—which only show that a man recognises his master's interests as his own—secure a man's promotion and future success. In fact, I have seldom known such men fail to get on sooner or later; and though master-gardeners are naturally reluctant to part with such, I never knew of an instance in which they were not desirous of promoting their interests, as far as lay in their power. We are in the habit of meeting head-gardeners from all parts of the kingdom frequently every year, and often we hear the query, "You haven't a good man you can send us, I suppose"—and, "A man you would like to keep, you know." And so, often enough, some deserving man has a service done him when he least expects it.

As regards character-giving, young men may rely upon it that the "honest, sober, and industrious" type of certificate will stand them in poor stead if it cannot be backed up privately. Such certificates are little attended to. Perhaps it has been given by a good-natured master, who stated the good points and left the bad ones out; but who would, like an honourable man, give his candid opinion privately, if asked for it, as is invariably the case in these days. A certificate of character is not to be despised, if it is a good one, and is given in the hearty conviction that the individual really deserves it; but even an unprincipled man would have no object in giving a man such a character, unless it was his plain duty to do so. These remarks are penned with the object of impressing on young men how much their destiny lies in their own hands, and that they must rely chiefly upon themselves. No one can make them gardeners unless they

will, and will strongly; and few will try to aid them in an object in which they are themselves so little interested.

In conclusion, let me say a word about English and Scotch gardeners. As workmen, they are perhaps about a par. The Scotchman has generally the advantage in education and force of character, but he is far behind the Englishman in address and manner—at first, at least; for the Scotchman can take on a polish that an Englishman cannot often approach. But young Scotch gardeners coming to England find their awkward manners and scant civility to operate injuriously against their interests. Their broad dialect is rather entertaining than otherwise to English ears, but their politeness is a commodity that is apparently not “cheap.” It is a matter of the deepest perplexity to them whether they are justified in saying “Yes, sir,” or “Ay,” or “Ou ay,” to a superior; and touching their hat to every one is an action regulated always by the most conscientious scruples, and then it is done with such a grace, and the operation is so lengthy and laborious, that, as we once heard said, “You may think a deal of a hat from a Scotchman.” Now we are not speaking as an Englishman, nor with the least prejudice, but only with the object of impressing upon your young readers that a pleasing address is one of the most important things for them to learn. We know at least one fine place in England where “Sandy” is not tolerated at all for the above reason, and many places where he is not trusted about the conservatory or house for fear he should incur the tremendous responsibility of being respectful and polite. This may seem strange in the face of the fact that there are so many Scotch head-gardeners in England, but it is easily explained. It is his other good qualities that have pushed him on, not his manners, though in all probability they may have mended the while. While penning these remarks, I am not oblivious to the fact that masters are sometimes to blame—that they are irritable and harsh with their men in some cases, causing discomfort to all parties; but as a rule, it is unusual for good, diligent, painstaking men to have reasons for complaining of their master’s conduct towards them. A master’s responsibilities and anxieties are always great enough, without being increased by the neglect and shortcomings of his men, who make the master to a great extent, and not unfrequently turn an indulgent one into a tyrant, or something like it. Seeing, however, that a private garden cannot be turned into a co-operative concern, it is much better that there should be no obligations on either side, though it may be proper enough to foster a mutual interest in the work. Therefore engagements should always be definite, and extra work should be paid for, either in money or time—that is, when it is enforced. A man who is interested in his charge will not of course be tied to a minute or two on an emergency, nor will his master be so with him; but when a man knows his duties distinctly, and that they must be satisfactorily fulfilled, it is alike advantageous to both him and his master. In such cases it is, however, essential that a man be paid a fair wage, which is the case in a good many districts now. The average wage for journey-men in this district is at present about 17s. per week, with lodgings, and very commonly potatoes and milk, an allowance for Sunday duty, and the usual perquisites—altogether equal to 21s. or 22s. per week at least. Such a wage, with no broken time, and no expenses for tools—an important item to the tradesman and ordinary labourer—is by no means to be despised by young gardeners, whose occupation does not fit them to enter into competition with any other than the labouring class.

J. S.

[They are not over-paid at the wage named, but better paid than are head-gardeners.—ED.]

CLEMATIS JACKMANII.

WHEN visiting the gardens of Lord Polwarth, Mertoun House, near St Boswell's, about the middle of September, my attention was called to a fine plant of the above, covering the whole gable of a house 20 feet by 16, and literally one mass of bloom. Growing on an east aspect, its appearance was so extraordinary beyond anything I had ever seen before in *Jackmanii*, that I requested Mr Fowler, his lordship's gardener, to give me two of his men to assist in counting the blooms, and after carefully going over the plant, we found that there were close on 300 fully-expanded flowers. They possessed a peculiar richness, which arose, probably, from the plant facing the east, and being shaded from the sun after mid-day. I may mention that this plant was put out in its present position about five years ago, and in that time it has attained the above extraordinary dimensions.

The kitchen-garden here is in the old style of hill and dale; south from it there is a small flower-garden, principally filled with hardy plants of various sorts, having fine variegated foliage. *Viola Perfection* and *V. lutea major* are largely used here, and with good effect. From this there is a broad walk leading along the bottom of a deep dell to the mansion-house; on each side of this walk the banks are very steep. Lately a large number of trees have been cut down, and their places filled up with some of the newest and rarest varieties of Coniferæ, which seem, from the growth they are making, to be just in the place that suits them.

The park here is of very considerable extent, and Mertoun has many natural advantages which add much to its beauty. The mansion-house is a modern structure of great extent, and stands on the banks of the Tweed, about five miles above Kelso. The trees have been very judiciously thinned, so that fine peeps of the river can be had from the mansion-house both up and down.

On the south side of the mansion-house there is a very nice flower-garden of considerable extent; in this, I understand, Lady Polwarth takes great interest. The bedding-out is on a very large scale, and everything is so well done and so neatly arranged, that it gives evidence of a skilful and painstaking gardener.

Returning to the *Clematis*, the soil in this neighbourhood seems well adapted to its culture. On visiting Gladswood, the seat of John Meiklam, Esq., which lies about three miles north from Mertoun, Mrs Meiklam has quite an assemblage of those beautiful plants on the wall of the mansion-house, and they are so arranged that the one colour contrasts well with the other. There is the dark-purple *C. Jackmanii* alongside of the pure white *C. candida*; and again, the whitish-

blue *C. lanuginosa* and the dark mulberry *rubella*. Many of those plants have attained the height of 20 feet, and flower every season in the greatest profusion. Many of the newest sorts have lately been added here, and to all appearance they will grow with the same luxuriance as the older varieties.

At Damside, the seat of the late James B. Duncan, Esq., near Auchterarder, there was a plant of *C. lanuginosa* put out with the intention of covering an old rustic bower: close by there was a large Rose-bush of the old single red, about 8 feet high, and bushy in proportion. Somehow or other, the Clematis was allowed to fix itself on the Rose in place of the rustic-work, and now it has taken complete possession of the Rose, and for the last two seasons it has been one sheet of flower all over the plant. At Damside the frost is as severely felt as in any part of Scotland during the winter. But here this plant has stood all the above years without any protection whatever, showing how very hardy the Clematis is, and how well it can adapt itself to circumstances when left alone.

JOHN DOWNIE.

WEST COATES NURSERIES, EDINBURGH.

[Too much cannot be said for *Clematis Jackmanii* and its congeners. They thrive on a north aspect with us, and are in bloom now, November 30.—ED.]



A PLEA FOR HARD-WOODED GREENHOUSE PLANTS.

OLD gardeners, and gardeners in their prime, will remember a time when greenhouse shrubs, or, as they were generally named, hard-wooded plants, were the principal, if not the sole, occupants of the greenhouse in British gardens. The various tribes and genera of New Holland and New Zealand shrubs, along with the Heaths of the Cape, the Camellia, the Azalea, and a considerable gathering of beautiful shrubs from various parts of temperate Asia, were in those days the glory of the greenhouse and conservatory, and all places that claimed to be well appointed; and in those even which had no such claim, a sprinkling of them found a place and were delighted in. A change has been gradually but surely brought about in this, as in many other matters in gardening; and now it is as rare to meet with a good collection of these old-fashioned greenhouse shrubs as it is to meet with a gardener much under forty years of age who knows or cares much about them. Heaths, Epacrises, Camellias, and Azaleas, still remain in greater or less variety and numbers about most places. These could not be dispensed with on account of their value as winter and spring flowering plants; they were therefore adapted to meet the changing taste and growing wants of the proprietors of gardens, and have increased in

variety and usefulness since the time when they alone, of the hundreds of other greenhouse shrubs then commonly cultivated, were found comparatively facile helps to gardeners in compassing the wishes of their employers.

In all changes there is something to regret and something to rejoice in. The force of this truism applies equally to changes in gardening taste as to changes in far more important affairs. I for one regret very much that the most interesting and beautiful class of plants in question are now so rare that they are only to be found in a few of the grand places sparingly, and in the botanic gardens. But I rejoice also that other beautiful plants, though more trivial objects of the gardener's art, but not therefore less useful to the attainment of the end for which he works, have sprung up into importance. No one appreciates more the improvement, both in cultivation and quality, that has been effected of late years in the China Primrose, the Chrysanthemum, Cineraria, Calceolaria, Pelargonium, and the Fuchsia, which, with the increased taste for the various bulbs adapted to forcing, and the demand for increased accommodation for bedding-plants, have been mainly instrumental in elbowing the less tractable classes of hard-wooded plants out of general cultivation. I appreciate fully all this progress, but am conservative enough to regret the loss, and long for the reinstating of many of the beautiful and interesting old-fashioned shrubs of the greenhouse in their former place and favour. About the old-fashioned greenhouse shrubs there was a substantialness of character, with grace and variety of habit, and beauty, interest, and variety in the form and colour, which are, comparatively speaking, wanting in the few forms of plants that now occupy their place in the greenhouse for a brief season, and then are discarded for ever. When a Calceolaria or Cineraria has finished flowering, it is, so far as the purpose of decoration is concerned, used up; it may serve the purpose of reproduction afterwards, but nothing more. And so it is with most of the plants that have taken the place of the more enduring old-fashioned shrubs of the past. About these latter, interest accumulated from year to year insensibly, as it gathers round a household god. If one or other of them died, it left a blank not soon to be filled up—a circumstance not calculated to raise them in the estimation of those who delight only in the comparatively rough-and-ready courses of cultivation which perfectly succeed in bringing in relay on relay several times a-year of the useful classes of herbaceous plants alluded to, but which keenly sharpened the cultural wits, and concentrated the attention of all concerned in their cultivation in the time when hard-wooded plants were the glory and pride of a successful plant-grower.

If the respective merits of hard-wooded and herbaceous plants for

the decoration of the greenhouse are fairly examined, the former are by no means eclipsed by the alleged superiority of the latter. It is true they cannot in general be forced and brought in at different seasons of the year, and this is the strongest argument against them in a general way; but it is of small force when it is remembered that in their varied ranks many species, and even families, when well selected in accordance with the end in view, may be brought together to maintain a display of flowers in the greenhouse the year round. The display may be less massive than that produced by the plants at present employed for the purpose, but it may, I think, be claimed for it that it is accompanied by an amount of variety and freshness of interest that mere massiveness fails to yield to the beholder. But in some genera of greenhouse shrubs there is no deficiency even in the quality most sought after in flowering plants at the present time. What among the popular soft-wooded plants can equal the profusion and massiveness of the *Acacia Riceana*, the splendid plant of which in the corridor at Floors Gardens is worth going a long way to see? Other species of *Acacias* may be mentioned which are perhaps inferior to *Riceana* in point of grace and rich profusion of bloom, but in no degree are they inferior to the best display which can be produced by soft-wooded plants in similar colours, and of such *A. Drummondii*, *grandis*, and *celastrifolia* may be instanced as examples which by no means exhaust the list. Elegance of colour and form are special characteristics of this numerous and diverse class of plants; and it is wonderful, in these days when the efforts of gardeners are directed so strongly to the production or introduction of something new in the decorative way, that some favour has not fallen on the best at least of them. The object of this paper is not to insist on any superior fitness which they have over any other class to meet the growing demand for greater variety in flowering greenhouse plants, but to show that among hard-wooded plants as a class may be found all that is wanted to meet that demand. A more general adoption of the old practice of growing them in collections by themselves, wherever the means admit of it being done well, would be a wholesome step; it would give young men more frequent opportunities of becoming acquainted with the plants themselves, and of learning how to cultivate them.

W. S.



COCOA-NUT FIBRE FOR PROPAGATING.

THE art of propagating is frequently rendered a tedious and difficult operation with the amateur, and even the professional horticulturist, in

the immediate vicinity of towns, where the scarcity of all good soils is much felt, particularly the total absence of one very essential propagating commodity—viz., leaf-mould—which necessitates the use of many makeshift composites that would test the skill of the renowned provincial propagator. Leaf-mould is not absolutely indispensable in propagating. Peat is superior in the case of hard-wooded plants. Others root in pure loam, while in sand alone many root rapidly; but the roots produced in sand are so long and tender that breakage while shifting is unavoidable, consequently the young plants get a check at a period when they have little spare energy to withstand it. With a proportionate addition of leaf-mould to the sand, masses of short roots are formed into a ball at the base of the cutting, which can be conveniently lifted and replanted without ever molesting a fibre. Unquestionably leaf-mould, or something equal to it, possesses advantages in this respect not to be derived from other sources. As the propagating season advances with the dawn of another year, the inauguration of Cocoa-Nut fibre as a valuable substitute, containing all the rooting qualities of the mould, may be of service to those whose endeavours have hitherto been thwarted through the want of needful appliances in this indispensable operation; for on spring propagating of all sorts of soft-wooded bedding, stove, and greenhouse plants, with sure and rapid strides, rests the grand basis of the future display.

Cocoa-Nut fibre affords great advantages in propagation. I find cuttings root more surely and quickly in a mixture of fibre and sand than in any other mixture I have tried, its soft texture having a peculiar root-producing tendency—a result attended with many benefits, as it is observable that cuttings, when long in rooting, soon become weak and sickly. When used in pots or pans, as each are emptied of the rooted cuttings, the contents may be turned out, put through a sieve, and again returned into the pots, and refilled with cuttings. When a small bed is used (which is the best of all modes of propagating), as each successive batch is removed a stir up is all that is required previous to inserting another lot. As a plunging material it is equal to, if not better than tan. When done with for this purpose it makes an excellent covering for Hyacinths, Tulips, and all other bulbs, previous to their introduction into forcing quarters.

This convenient substance can be had in the neighbourhood of towns where brush and mat factories exist for little more than the carting away. Nurserymen supply it in bags of any quantity at a very cheap rate. Though not new, it is surprising that this refuse, so easy of access, should not be more taken advantage of by those whose supplies of propagating materials are limited.

J. M.

A SELECTION OF PLANTS WITH ARRANGEMENT
FOR EFFECT.

IN arranging a plant-house, it is a comparatively easy matter to set down the plants where they happen to fit in nicely ; but when a pleasing harmony or contrast is aimed at, the task becomes a much more difficult one. Plants require to be grown in quantity for the purpose, and when a judicious selection of sorts is made and well attended to, and coming in for use at their proper time, it is well-repaid labour—at least it has always been a pleasant task to me, and I have practised it to some extent for several years. In this paper I purpose to treat of stove-plants only, and confine myself to four sorts—viz., *Begonia manicata*, and *Dracenas Cooperii*, *terminalis*, and *ferrea*. Old *Begonia manicata* is a great favourite of mine. I have had large plants of it in 15-inch pots, and always several small ones, their period of flowering extending from January till the beginning of April. The idea of using it as an effective plant occurred to me some two years ago, when arranging the stove in spring. I happened to have two very well flowered plants in 5-inch pots, and set them down with a *Dracena ferrea* between them. I thought at the time that a row of *B. manicata*, with the above-mentioned *Dracena* between them, would have a fine effect. I took a note of it, and prepared a number of plants in proper time as under. The cuttings were put into the propagating bed in the beginning of June, and when nicely rooted were potted into 3½-inch pots: when ready they were shifted into 5-inch do., and allowed to remain on the back bed of the propagating pit, “among other plants grown for a similar purpose,” till the beginning of November, when they were taken to a shelf in the plant-stove, where they were allowed to remain till they were coming into flower. By the time they were in full flower, their height, pot and all, would be about 18 inches. They were taken down and arranged alternately with the *Dracenas*, which ranged from 15 to 18 inches in height, pot included. This made a very pleasing, and at the same time a very effective, front row. The fine dark foliage of the *Dracenas* contrasted nicely with the beautiful and graceful flowers of the *Begonia*, while its fine large green foliage formed a beautiful groundwork to the whole, the pots being almost completely hid by it. I have a few more favourites which I have grown for similar purposes, but will reserve them for another paper.

J. HEATH.

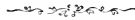


SCUTELARIA MOCCIANA.

THIS is a really effective and useful accession to our list of free-flowering stove-plants, and one that should be in every collection where effective furnishing plants and cut flowers are much in demand. It is a soft-wooded free-going plant, compact in habit, and yields in great abundance terminal spikes of rich dark-orange flowers. And when each plant is denuded of its flowering stem and spike, the plant has the very commendable habit of throwing up fresh growths from the bottom, which in their turn yield their effective spikes of flowers.

Cuttings put in in February, March, and April, and grown freely on, will continue the succession of bloom from the end of June till Christmas. It strikes freely in a bottom-heat of 80° , and when rooted should be potted into 3-inch pots, three plants in each pot. When well rooted another shift into a 6-inch pot will suffice to make nice strong plants of it large enough for ordinary house-decoration, and for yielding a goodly supply of cut blooms. It thrives in a soil composed of one part turfy loam, and one part of fibry peat with a little well-decomposed manure and silver-sand. To grow it dwarf and compact, keep it near the glass well exposed to light; and in an ordinary stove temperature it grows very freely. It should be freely syringed till it begins to bloom; and to keep the plants blooming vigorously without larger shifts, water occasionally with clear manure-water.

A. P. H.

MADRESFIELD COURT AND GOLDEN CHAMPION
GRAPES.

I HAVE these two under the same treatment in newly-prepared borders, Madresfield Court having the best chance, as it is planted in two houses, the one a Muscat house, the other a Lady Downes. All the Vines have done well, and Madresfield Court is in strength equal to the best cane in the house. I formed a good opinion of this Grape last year, only it did not keep to my expectations. Thinking then that I saw the cause of it not keeping, I did not alter my good opinion of it, but propagated it so as to plant a house of it, thinking it would come in well after Hamburgs and before Lady Downes. In planting it, I used the precaution to plant alternately with Black Hamburg. After another year's experience of it, I find it does not keep so well as Black Hamburg, but has kept even worse than it did last year: not only so, but it rotted in the bunch before it was properly ripe, or sweetened to the height of its flavour. Mr Thomson from the Tweed Vineyard, saw it in August, examined it minutely, and said he never before saw it so fine. In selecting the best bunches for the eight varieties for Glasgow show, I found it was going as Mr Cramb described in the 'Chronicle,' where he has been held in error by many for giving a true description of it under his care. After returning from Glasgow, in the short space of eight days, I found the best bunches of Madresfield Court a perfect

wreck, unpresentable at a table of the meanest character. I can safely say, had these bunches been shown in August, they might have been considered very fine. As regards the spotty character that it assumes in its unripe state, it was worse with me than any other Grape grown here. These houses were started in the early part of February. Expecting the Vines to grow grossly and strong as they indicated the previous year, and with the intention of having the wood well ripened, they were watered sparingly. As soon as the Grapes were thinned, a little front air was given during mild nights, which was increased until the first sign of colour was perceptible, when full air was put on the house night and day, and moisture withheld. Under the same treatment all the other varieties are keeping well.

Golden Champion with me is growing in a Hamburg house, with a mixed lot of Vines at one end, that require heat longer in the season to finish them as well as they should be. To modify this I start soon, and leave a little front air on during the night at the end where the Hamburgs and Golden Champions are growing. I have it worked on the Hamburg and also on its own roots. It was ripe in July, and some of the bunches were cut in October slightly shrivelled, of excellent flavour and without a spot.

J. HUNTER.

LAMBTON CASTLE.

I was glad to see in the 'Gardener' for last month that Mr Hutchinson and his friends had been successful in fruiting the two new Grapes—Madresfield Court and Golden Champion. The former I have fruited here this season, early in pots, and also inarched on the Black Alicant (one of its parents), and in neither case did it prove worthy of cultivation. When under pot-culture the berries began to crack with the first signs of colouring. Subsequently a great many of the berries were attacked with a spotty gangrene which made sad work with the bunches. The inarched Vine showed some nice bunches of fruit, with good-sized berries, very promising indeed until about ripe, when the shrivelled spot made its appearance on the berries, and, on slight pressure with the finger, the skin would burst, in fact sloughing away. Golden Champion I have fruited in pots only. Nice bunches were produced which set well, but some of the berries when about changing colour showed the spot, and were cut away, and the bunches afterwards finished a fine sulphur-yellow, with the flavour all that could be desired. I have a fine cane of this Vine on the Muscat Hamburg, and next spring I intend to inarch it on the Duchess of Buccleuch, which I believe will prove the best of all stocks for it. My opinion with regard to this fine Grape is, that we ought not to thin the bunches too much, so that, should any of the berries become diseased, they might be cut away without materially disfiguring the bunches.

ISAAC WATSON.

NUNEHAM PARK GARDENS, ABINGDON, BERKS.

Mr Hutchinson's assertion is correct. I did assist to judge last August at the Cardiff show; and we did agree to give it the prize in preference to the Hamburg, solely on the condition that the bunches were larger and better coloured—not, certainly, owing to superiority of flavour. The Madresfield possesses the property of producing a high colour for a month or more before it reaches maturity. This was a vigorous attempt to gain a prize, as the two bunches of the Hamburg and Madresfield Court were the produce of the same garden. I cannot help noticing that it is unjust on the part of the managing committee to allow a competitor to stage two varieties of Grapes, or any other kind of fruit, for the

same prize, which in my opinion is tantamount to saying, "If I lose by one dish, I may gain by the other." Such a practice presses heavily upon gardeners of less accommodation than that at Cyfarthfa Castle, where the means are very extensive, and where every appliance for the production of first-class fruit that ingenuity can suggest has been used.

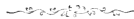
I have known Mr Cox personally for many years past, and have the highest opinion of his integrity, and believe him to be incapable of attempting to deceive the public by his new Grape, so that my strictures have no personal relation; they are not tares sown by an enemy. Our opinions on the quality of this Grape, however much they may differ at present, will some day be more united. It is merely a question of time: the truth or falsity of what I have said will, sooner or later, be recognised. In all our discussions, what we really do want, and should by legitimate means strive to obtain, are facts—positive facts, rather than speculative guesses.

I have, as well as many other gardeners, produced fruit of the Madresfield Grape equal in every respect to the specimen shown at Cardiff, which Mr Hutchinson sets up as an example, and otherwise lauds so highly. Still withal it will not keep, for so soon as ever it reaches an eatable condition it rots out of existence. No matter how carefully aridity, night and day ventilation, are managed, the infection spreads from berry to berry, till nothing remains but the skeleton, however promptly the diseased ones are removed. If Mr Hutchinson identifies the dry coriaceous spots sometimes observed on the White Muscat, and very frequently on Lady Downes seedling, he labours under a mistake, as they are in every respect distinct from that on the Madresfield Court. These spots arise from various causes, and none are so fertile as an over-heated atmosphere and deficiency of foliage. Many of us ventilate too scantily, and that particularly during the early part of the day, and so keep a potent invisible enemy in confinement, while he is of himself making a strong effort to escape. At last, when probably too late, we discover his depredations, and then begin to chant, "Oh dear, what can the matter be?"

If true, as Mr Hutchinson has alleged, that the principal cause of failure is an undue amount of water at the time of stoning—a statement that has certainly taken me by surprise—will he then have the kindness to explain how a little more or a little less water at that period exerts an influence over perfect maturation? There is no one, I hope, possessing even the simplest rudiments of Grape-culture, who would administer so large a dose of aqueous food as to paralyse vitality—a necessary event if Mr Hutchinson's dictum is correct. Where is our refuge, may I ask, when the roots are growing in an outside border, and more particularly during the past summer, as the rainfall has everywhere been excessive? In my case the roots were confined to the inside of the house, so that no damage from wet could possibly occur.

ALEXANDER CRAMB.

TORTWORTH.



SAXIFRAGA LONGIFOLIA.

I CAN quite confirm D. T.'s remarks on the above plant in your November issue, p. 508, as being the most beautiful and ornamental Saxifrage that we have at present. I have some plants of it on a rockery here, and they have been the admiration of every one that has seen them. It will be a grand acquisition to our flower-garden when we can get a good stock of it, either for carpet-beds, long lines, or edgings to beds. What a grand effect it would produce planted

as an edging to beds in the same way as we use *Echeveria secunda glauca* or *Sempervivum Californicum*, or as any one has seen them used at Battersea or Hyde Park by Mr Gibson! only one row would do in place of two, as is generally necessary in the case of the *Echeveria* and *Sempervivum*. I should feel obliged if D. T. would let us know the quickest way to get a stock of it. I have used *S. cotyledon* this season, which looks very pretty, but not nearly equal to *S. longifolia*.

J. ANDERSON.

THE GARDENS, HILL GROVE, KIDDERMINSTER.

[Planted in rich light soil—loam, leaf-mould, and sand—it makes offsets freely.—Ed.]



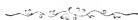
KEEN'S WINTER-FLOWERING CARNATION, MISS JOLLIFFE.

HAVING some time ago seen in a contemporary a glowing report of "Miss Jolliffe," winter-flowering Carnation, I was desirous of seeing it. Having been gratified, I am able to indorse the high opinion of so many gardeners of distinction who have proved it to be of great value for winter work; and those who have a heavy demand for cut flowers at a season when they are scarce, will find this a valuable acquisition. The flowers, which are produced in great abundance, are of good substance, pale pink in colour, and have a strong but very pleasant perfume. This novelty was raised by Mr Keen, gardener to John G. Sheppard, Esq., of Campsey-ash, Wickham Market, Suffolk.

His employer has kindly granted Mr Keen permission to do as he pleases with it, and it is now being sent out direct from Campsey-ash.

BLENHEIM.

M. TEMPLE.



QUICK WAY OF FRUITING BANANAS.

(MUSA CAVENDISHII.)

LAST April I had two very fine suckers of Bananas in 10-inch pots, and being unwilling to throw them away, yet not knowing very well what to do with them, being scarce of room, I resolved to act upon a hint I got from a gardener of very high standing—viz., Mr Johnston of Glamis Castle Gardens. I planted them in the back-bed of the Pine-pit, the height from top of bed to glass being not more than 5 feet. They were turned out of the pots and planted into the bed, made up of nothing else but leaves, on the 27th of April. The bed is bottom-heated by two 4-inch pipes. The plants grew very rapidly and soon got crushed up against the glass, the long half-opened leaves bending in a number of curious ways, and some of them lifting a pane and bolting out altogether. The evil, however, was easily cured by going up on a ladder and pushing them in again and replacing the pane. They showed fruit on the 30th September, just five months after planting; and had the season been an ordinarily good one, I have no doubt they would have fruited sooner. The clusters of fruit are very good considering the material they were grown in, also the somewhat unnatural circumstances. I would, however, recommend planting two or three months sooner, in order to get the fruit ripened the same season. When a plant shows fruit late in the season, it seldom or never ripens through the winter—at least that is my experience. The plants by being crushed up against the glass go quickly into fruit.

J. HEATH.

HORTICULTURAL EXHIBITIONS.

ROYAL CALEDONIAN HORTICULTURAL SOCIETY, December 11.—Taking the effects of the season into consideration, the fruit at this show was exceedingly good, many of the late Grapes showing fine finish, but to the Pine-apples must be awarded the palm for size and culture. For one smooth Cayenne, Mr P. Stewart, gardener to — Tennant, Esq. of The Glen, had some difficulty in getting first with a fine fruit, weighing 8 lb., Mr Laing, Pitcairnie, being his close opponent with one about the same weight, but rather too ripe, which was placed second. Though these are not wonderful nowadays, yet they are the best that we have seen shown this season. Mr Methven, Blytheswood, also competed in this class. For one Queen Pine, Mr Laing was first. For two bunches Muscat of Alexandria, the Rev. W. Bushby, Dalkeith, had an easy first, with marvellously perfect examples. The bunches, though small, would have done credit to the best of seasons, and the most celebrated practical grape-grower. Mr P. Stewart was second. Mr Shaw, Donisla House, Edinburgh, had in his first-prize collection of four varieties Muscat of Alexandria, Gros Coleman, Alicante, and a 5-lb. bunch of Barbarossa, all fine productions. Mr Hannah, Burnhead, was second with fine Lady Downes, Black Hamburg somewhat deficient, good Alicante, and Mrs Pince. Mr Greig, Craighend Park; Mr Macintosh, Luss; and Mr Brunton, Gilmerton, Drem, had good examples. Mr Shaw was first for the single bunch of Gros Coleman, with a bunch large in size but very deficient in colour. Two bunches Lady Downes, first, Mr Macintosh Leslie; second, Mr Hannah. Mr Hannah was first for one bunch Black Alicante, perfect in colour, as was Mr Shaw's second. White Lady Downes was well shown by Mr Greig, who obtained first amongst competitors with nicely-formed, firm, well-coloured bunches. With one bunch of Muscat of Alexandria, Mr P. Stewart had first for flavour in whites; Black Hamburg from Mr Summers, Polton House, Lasswade, taking first amongst blacks. For any variety of black, Mr Leyden, gardener, Whitehill, had first with West's St Peter. For whites, Mr Brunton and Mr Greig showed Bowood Muscat and Chasselas Napoleon in excellent condition. Mrs Pince was well shown by Mr Hannah, who appeared to grow this variety well. Though prizes were offered for Madresfield Court Grape none put in an appearance.

Apples and Pears were very fine. For the twelve varieties of baking, and twelve dessert Apples, Mr Brunton came first. Mr Anderson, gardener to the Earl of Stair, Oxenford Castle, taking first for Echlinvale seedling; Mr Cummings, gardener to the Earl of Wemyss, Amisfield, having the same for some beautiful King of the Pippins. Mr G. Barrel, Salton Hall, Mr Gillan, Ormiston Hall, and Mr Anderson, Ashlay, exhibited splendid fruit of Pears. Mr Anderson, Oxenford, had first for Marie Louise, very fine. Mr Croshil had first for Beurré Niel; and Mr Allan, Rathro Park, for Louise Bonne de Jersey. Millet de Nancy and Winter Beurré were prominent amongst other collections.

Much credit is due to the nurserymen who furnished the greatest part of the hall with magnificent collections of fine plants, Messrs P. Lawson & Sons having the orchestra tastefully decorated in their usual style; while the surrounding tables were principally filled from the collections of Messrs Downie, Laird, & Laing, Methven & Sons, Drummond & Brothers, and Gordon & Sons.

Conspicuous amongst small collections of plants were Mr N. Fraser's collection of six Ferns from Canonmills Lodge. These comprised *Adiantum Farlayense*, *A. cuniatum*, *Asplenium fragrans*, *Goniophlebium sub-auriculatum*, *Pteris*

umbrosa, and *Todea superba*—large plants in excellent order. Mr Paul, Gilmore Place, was first for two *Epiphyllums*, finely in bloom, compared with the others, which were unworthy of notice. Orchids were few, Mr Currie, Salisbury Green, having a first award for a lot, in which *Lælia anceps* was a noble specimen, bearing over a dozen spikes, each producing a number of flowers. The same was given him for ornamental berried plants, and also for a collection of *Dracænas*. Mr Shaw came first for the white and pink *Primulas* with a fine strain of well-grown plants. *Chrysanthemums* were not numerous, the greater bulk of them coming from the nurserymen.

Vegetables were in abundance and of fine quality, Mr Anderson, Ashley, being first for the twelve sorts, with some fine London Cauliflower, beautiful Beetroot, grand Sandringham dwarf white Celery, &c.

Downie, Laird, & Laing exhibited a quantity of splendid winter Cucumbers. Unfortunately we could not ascertain their names, but they were remarkably good for the season.

First-class certificates were awarded to Mr Thomson, Tweed Vineyards, Clovenfords, Galashiels, for an excellent basketful of Gros Coleman Grape, with most exquisite colour and finish, bearing a superior stamp in size of berry to any Grape there, with a flavour equal to the finest Lady Downes or Alicante; and to the Rev. W. Bushby, for a box of magnificent Muscats, most equal in size of berry and quite amber-coloured, the whole forming a collection which ranked amongst the finest displays of Muscat Grapes we had ever the pleasure of seeing.

Mr P. Stewart, The Glen, had a cultural commendation for three smooth Cayenne Pine fruit, with a combined weight of 22 lb.



REVIEW.

THE SIX OF SPADES. A Book about the Garden and the Gardener. By the Rev. S. Reynolds Hole. William Blackwood & Sons.

THERE are few authors who are at the same time highly amusing and instructive writers. We need scarcely say that the author of this book is one of those few. There are few men occupying the social platform that the Rev. Reynolds Hole occupies, who would dedicate a work to serving-gardeners with a "brother's love." His dedication runs thus: "To all true gardeners, whether they serve or rule, this book is offered with a brother's love." If there can be anything in a dedication to commend a book to gardeners, surely it is in this. We feel quite incompetent to review this book so as to give an idea of what it really is. We will therefore probably do it more justice by simply saying, that it describes a series of meetings of a little society, called the "Six of Spades," at which a Mr Oldacre, a Mr Chiswick, a Mr Evans, a Mr Grundy, and the Curate, discuss a great many matters connected with gardeners and gardening in a most amusing, witty, and instructive manner. The book sparkles with Mr Hole's well-known wit, humour, and good sense. The last chapter, "On the Happiness of a Garden," should be read by all who own a garden, in order that they might see how a large-hearted man dispenses happiness and relief to the more humble around his garden-gate, as does the author of the 'Six of Spades.' The book is beautifully printed, and in every way got up fit for the drawing-room.

Calendar.

KITCHEN-GARDEN.

THE past autumn being what is termed "open" may have been advantageous to those who have not had their proportion of rainfall; but in many districts the continued floods have kept ground-work almost suspended. Whenever opportunity affords, there should be no delay in getting all vacant spaces turned up to the weather, trenching as much as time will allow. Deep soil has the advantage of suiting either wet or dry seasons, and the fresh bottom turned up is much like maiden soil. Strong heavy clay should not be turned up in quantity, but only to help very light soil. Frost will break it down like powder, and it can be well forked into the surface when the ground is being prepared for cropping. A sandy bottom can be used in the same way to help a heavy surface. Rank manure, free from sticks, does much for heavy land when the material is trenched down two spades. Draining is so essential to success, that we need hardly refer to it. Where there is not natural drainage, good drains should be made, leading the waste water to a tank or other storage. Now is a good time for such work, while much land is vacant. Get manure wheeled on in frosty weather; always keep in view what the ground is to be cropped with. Manuring should not be done at random, but to suit what crop is to be grown, changing the ground as much as possible. Though some can with success grow crops on the same soil many seasons in succession, yet it is not the most economical method of turning the garden to account. Change of crop, when done systematically, does much to save manure, and systematic arrangement saves labour. Where there is variety of soil in the garden and sheltered positions, they should be selected to suit the early crops which are likely to be got in during this month and next. We do not advise much sowing very early where there is not proper means to give protection.

Soil for Onions, Parsnips, and early Cabbage, should be well exposed and deeply worked to get it well sweetened. Beans and Peas may be sown on sheltered borders to succeed those sown in

autumn; but when turves, boxes, or pots are used, the trouble of sowing, protecting, &c., in the open ground may be abandoned. Now is a good time to sow for planting out; but no heat by artificial means should be given, as the plants would become drawn up, weakly, and unfit for planting. Peas in pots for supplies under glass should have plenty of light and air. Look after slugs, and destroy them. Chopped furze placed over seed before the surfacing of earth keeps mice and rats in check; and we think the Peas are benefited by its keeping the surface open. Red-lead does much to keep vermin in check. An extensive nursery-grower lately told us that they never required the aid of nets to keep birds from their Coniferae and other seeds since they took to using red-lead. Protect Peas with evergreen branches. Those coming through the soil may have old mushroom-dung, leaf-mould, or wood-ashes placed over the tops for protection. The earth drawn up answers well. Get good stores of Jerusalem Artichokes, Parsnips, &c., under cover before the ground is frozen over. Broccoli and Celery may be taken in for supplies when snow or severe frost prevails. Better to lift Broccoli when small than lose it by frost. When work cannot be done in the ground, Onions may be looked over, also Carrot, Beet, and all stores under cover. Potatoes should have extra attention, as in very many places the whole stock for seed is destroyed by disease. All seeds in stock may be proved by sowing a pinch of each in small pots, and if placed in heat they will soon vegetate and their true value can be easily ascertained. We frequently repeat this advice, as many new beginners are under the impression that new seeds of all kinds have to be purchased annually. Worthless seeds should be destroyed at once, as accidents may occur and give disappointment. Early Carrots, Radishes, double-bladed Onions, for salads, may be sown in mild heat, and when they vegetate, air and light must be given, closing the structures entirely against frost and wet. Potatoes may be planted in pits: heat must not be strong,

as a close warm atmosphere would soon ruin the crop. If the tubers are sprung a little before planting they will be all the better. Keep up regular supplies of French Beans by sowing a few every fortnight or oftener. Mushroom-beds are better when made up frequently. Asparagus, Seakale, Rhubarb, and Chicory may also be taken in frequently in smaller quantities when regular

supplies are wanted. Look well after slugs and other depredators among early vegetables. Seed orders will now be under consideration. We would say to the inexperienced, do not be led away by great "bargains," which are realised in print only. Get seeds from men of known respectability, and economy is secure. M. T.

FORCING DEPARTMENT.

Pines.—If ripe Pines are required in May and June, it will now be necessary to set agoing the required number of the earliest Queens that matured their growth early in autumn, and that have been rested by being kept dry and cool for some time past. Select those that have thick collars, and that have short, sharp-pointed leaves compactly set in their centres, and plunge them in a light place in a bottom-heat of 85° to 90° . In mild weather the atmospheric heat may range to 70° ; but when cold, 65° is high enough, for this month at least. When the temperature exceeds 75° with sun by day give a little air. As each row is plunged, remove all soil in which there are no roots from the surface of the pots, and replace it with a firm layer of turfy loam and horse-droppings in equal proportions; and as the soil will be dry, give them a full watering with water coloured with guano, at a temperature of 85° . After this give no more water at the root than is just necessary to keep them from becoming very dry; for if the plants have any tendency to grow without showing fruit, much water will increase it. Keep succession fruiting-plants quiet for another month at least; 55° to 60° at night, with a bottom-heat of 75° , is sufficient for these at present. All low pits that can be covered from dusk till dawn should be covered with mats or frigidomo when the weather is cold and windy. Whenever the day temperature exceeds 65° , give all suckers a little air for a few hours daily. Some of the earliest-potted suckers of last season may require shifting early in February before they become pot-bound. The necessary number of pots for shifting them should be washed, if not new, and soil should be put into some place to warm by the end of this month. Ten or eleven inch pots are sufficiently large for early Queens. Fruit that are

swelling off require careful attention at this dull season. Avoid an over-moist atmosphere, or the crowns will grow to an unsightly size: at the same time, sufficient moisture must be given to prevent a parching air. Keep them steadily moist at the root. The night temperature, in mild weather, may rise to 70° ; a few degrees less when hard firing is required.

Vines.—The past season was a very unfavourable one for late Grapes. They were ripened with little sunshine and too much moisture in outside borders, and are on that account destitute of fleshiness and sugar, and have not kept very well. Look over every bunch three times weekly, and remove every trace of damped or mildewed berries. Keep the temperature steadily ranging from 40° to 45° at night, according to the weather. Keep the ventilators shut when it is wet or foggy, and on fine days increase the fire-heat and ventilate freely, so that the warm air may carry off the moisture. Where only a few Grapes are now left, it is a good plan to cut them, with a portion of the stem attached, and put them in bottles of water in which a few pieces of charcoal have been dropped, and put them in a cool dry fruit-room where there is a steady temperature of 40° . In this way Grapes keep well, and the vinery can be used for other purposes, and the Vines pruned. All Vines from which the Grapes have been cut should be pruned at once. After pruning, if they have been infested with red-spider last season, remove every portion of loose bark, but avoid scraping them to the "quick," and wash them well with Fowler's Insecticide, using a hard brush, and afterwards dress them over with usual dressing of sulphur, soft-soap, and tobacco-water, reduced to the consistency of paint, with clay and cow-dung. We do not recommend this scraping and

painting unless the Vines have had insects on them last year. Wash every part of the wood-work and glass, and whitewash the walls. Remove all inert soil from the surface of the border, and replace it with equal parts loam and horse-droppings, and a little bone-meal. In some instances early-started grapes will be thinned, or ready to thin, and if required as early as possible to succeed late Grapes, may be forced briskly on as the days lengthen; 65° is sufficient at night. The forcing should be chiefly by day, under the influence of light. Do not over-crop, especially if the Vines are worth caring for. If the earliest crop is in pots, see that they are very attentively watered, and top-dressed with horse-droppings, into which surface-roots will soon find their way and feed. Avoid an over-moist atmosphere in all houses where Vines are in leaf, especially in dull weather, when air cannot be given in sufficient amount to prevent the foliage from being affected with warts. Disbud later houses, and stop and tie down the shoots. Thin off the bunches in the case of free-setting sorts to one bunch on each shoot for the present. Avoid the crowding in of too many growths, and just tie in as many as can get room to expand their foliage to the full light and no more. Start succession-houses; and presuming that a ridge of leaves has been laid in the inside border, turn over a portion of them daily to let the heat and moisture escape into the air: after they have broken an inch or two this may be discontinued. Begin them at 45° to 50° at night, regulating the heat according to the weather; gradually increase it to 60° by the time the buds have all well started into growth. If they show a tendency to break well at the top and not at the bottom of the Vines, bend the tops down, where the temperature is low, and elevate the bottom part of them as much as possible. The atmosphere should be kept moist till they are broken, and in bright weather the syringe may be used morning and afternoon till the buds swell. Put in a sufficient number of Vine eyes required to be grown into plants for another season's fruiting. These may be put singly in 3-inch pots, or altogether in a pan or box: we prefer the former. Let them stand in a temperature of 45° to 50° till early in February.

Peaches.—Force cautiously if the

weather be dull and cold. When the trees are in bloom keep the temperature at 50°, and give more or less air daily to create a circulation of dry air about the trees. Take pollen from sorts that produce it freely with a camel-hair brush, and apply it to the blooms of shy setting-sorts, such as Noblesse. There is, however, not much difficulty in securing a good set, provided a steady heat is maintained and cold currents of air are prevented. As soon as the fruit are set, raise the temperature to 55°. On the afternoons of fine days syringe all trees not in bloom; but when it is dull and cold, just sprinkle the floor and walls of the house. Prune and tie in succession-house, dressing them as directed in the case of Vines. If they have had insects about them last season, top-dress the borders with rotten manure, unless in the case of young trees growing vigorously, which should not be manured. Start the second Peach-house by the end of the month, beginning with 50° at night, unless when very cold. As soon as the young growths in early houses can be rubbed off, go over them and remove a portion of them, completing the operation of disbudding at not less than three times. A high temperature and moist atmosphere, when forcing is commenced, have a tendency to force on the wood too much in advance of the blooms, in which case Peaches never set so well, because their organs of fructification are weak. When the fruit sets in clusters, go over them immediately the blooms are shed and thin them off, leaving only one in a place, and always leaving the largest. The thinning, like disbudding, should be done at intervals, and not all at once.

Figs.—When the early crop is produced from trees in pots, now is a good time to start them. Plunge them in a bed of leaves with a bottom-heat of 80°. The air temperature will be high enough at 50° to begin with, increasing it to 55° by the time they burst their buds. Top-dress them with something rich. Syringe them twice daily when the weather is bright, and keep them steadily moist at the root. If they are in need of a shift they should be shifted at once, but the best time to shift is in autumn. In potting, use a rather strong loam, with a fifth part of horse-droppings, and a little bone-meal. Figs planted out, and intended to succeed those in pots, should be pruned if not

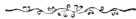
already done, and the surface of the border removed as far as roots will allow, and a rich soil put in the place of the old. This only applies to trees in a free-bearing state; young trees are apt to grow too strong if stimulated.

Strawberries in Pots.—Put a number of these into heat every ten or fourteen days, according to the demand and space. Keep them near the glass, and begin with 45° at night, increasing the heat to 55° by the time the plants are in bloom. If a little bottom-heat can be afforded them, they start into growth more freely and more strongly. Range early crops now in bloom from 55° to 60°, and give air on all favourable occasions, avoiding currents of frosty air. When they are set, raise the heat a few degrees and water more freely. Strawberries are moisture-loving plants, but will not bear stagnant water; therefore avoid the too common practice of standing early-forced plants in saucers of water, and see that the drainage of each plant is correct before they are put into heat.

Melons.—Sow for early crops in a temperature of 70°. A good way of raising young plants is to sow a few

seeds in 4 or 5 inch pots, half filling the pot with soil; and as soon as the plants grow above the rims of the pots, earth the young plants up. Do not stop them if to be grown on trellises near the glass; but if to be trained on the surface of the bed, stop them as soon as the young leaves are expanded.

Cucumbers.—Sow for early spring crops in the same way as directed for melons, only use a lighter and richer soil. Keep the temperature in the Cucumber-house in bearing from 65° to 70°, according as the weather is cold or mild. When cold, apply covering to the glass, if possible; it saves fire, and is better for the crop. Do not allow the plants to bear too many Cucumbers at one time, or it will weaken them. Keep the bed of soil moderately moist, and water occasionally with manure-water. Give more or less air according to the weather daily. Do not allow the leaves and young growths to become crowded, and stop the latter at every joint. Should green-fly attack them, fumigate moderately on two successive evenings. If fumigated severely, the young tender leaves are likely to be injured.



Notices to Correspondents.

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in the 'Gardener' to David Thomson, Drumlanrig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to, be forwarded by the middle of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

A LADY.—The following are all fine late summer and autumn flowering Clematis: Jackmanii, Prince of Wales, rubella, cærulea odorata, lanuginosa, Lady Boville, Alexandra, magnifica, Lady Carolina Nevill, purpurea hybrida. A rather strong loam, deep, well drained, and made very rich with well-rotted manure, are the chief conditions to their successful culture. You should read 'The Clematis as a Garden Flower,' by Messrs Moore and Jackman.

S. M.—Plant for cooking purposes Victoria, Magnum Bonum, Washington, Orleans; for dessert, Greengage, Jeffreyson, Kirk's Seedling, Golden Drop, Ickworth's Imperatrice. These are all excellent free-bearing Plums.

D. S.—Please send your name and address.

A YOUNG HAND.—The Royal Fern thrives best in deep peaty soil kept constantly moist. In shallow dry situations it remains in a dwarf stunted condition.

A GARDENER.—We observe the pruner recommended by Mr W. Thomson, in his treatise on the Vine, is advertised by Messrs Stewart & Mein, Kelso; and, doubtless, they can be had of others in the trade, probably from Mr Thomson himself.

F. F. S.—Sphagnum can be got on moorland boggy ground, but if you cannot get access to it in such places, nurserymen generally supply it to order.

R. D.—Cucumbers to bear from August till the end of November will do best on trellises. Melons to the end of September can be grown very well on the surface of the bed, though we prefer them on trellises also. If you have a good tight flue, you can make use of it for top-heat. If the walls of your pit are thin brick-work, a lining all round it—as you seem to have plenty of stable-litter and leaves—might be applied with advantage, even if there is no proper enclosure for it. Grow Volunteer and Telegraph Cucumbers, and Colston Basset and Golden Queen Melons. You had better keep the litter quite clear of the flue.

T. R.—We are quite aware of what you bring under our notice, but we do not intend to put the matter before the public, for we do not think even that would prevent some people from living on the brains of others.

CLEMATIS JACKMANII.—I was always assured that Jackman's Clematis would not flower in Scotland in pegged-down beds, as I had seen them in perfection at Mr Jackman's nursery-grounds; but this year, being anxious to give them a trial, we had a bed of *C. Jackmanii*, *C. rubella*, &c., edged with *Euonymus radicans variegata*, which has been a complete success, and the Clematises have been in bloom since July, are still flowering, and very effective. I am curious to know if they do well in other districts of Scotland. All the hybrid varieties flowered extra well on the wall this season here.

F. J. HOPE.

WARDIE LODGE, EDINBURGH.

[Will our correspondents reply?—Ed.]

A. H., UPPER NORWOOD.—Are your plants become pot-bound and stunted? If so, give them a shift, and grow them freely, well ripening their young wood, and they will bloom.

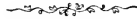
PHYLLXERA VASTATRIX.—We have some very interesting particulars from Mr Dunn, Dalkeith Gardens, regarding his experience and complete success in stamping out Phylloxera at Powerscourt without destroying the Vines, which we would have inserted this month, only our own remarks extended to more than was at first intended. Mr Dunn's observations we reserve till February.

Correspondents will much oblige by letting us have their contributions by the 16th of the month.



THE GARDENER.

FEBRUARY 1873.



RIPENING LATE GRAPES.



WE commend Mr Henderson's forcible and seasonable remarks on the ripening of late Grapes in our present issue to the particular attention of those of our readers who are interested in the matter. It is a singular fact—and perhaps one not sufficiently recognised and taken into consideration—that our very highest flavoured Grapes are, with scarcely an exception, to be found among those to which long practice has assigned a higher temperature than is considered necessary for the general run of Grapes,—such, for instance, as the Muscat of Alexandria and its varieties, the Frontignacs, &c., which are beyond question in the front rank of highly-flavoured Grapes when ripened under the influence of a high temperature, abundance of light, and a dry atmosphere. But grown and ripened under circumstances the reverse of these—*i.e.*, started late in the season and ripened late in a comparatively low temperature and damp atmosphere, these very Grapes never take on that finish which is a sure sign and accompaniment of high flavour and long-keeping qualities. Badly-ripened Muscats, as pointed out by Mr Henderson, are amongst the most distasteful of Grapes, and never hang very long without shrivelling. Yet, when highly coloured and ripened early, there are few better keepers: we have known them amber-coloured in August, and cut and sent to table in March. Is it not therefore reasonable, and in accordance with facts, to suppose that many of our best late Grapes are capable of great improvement in quality by acting upon the points to which Mr Henderson directs attention? We think it is, and that the matter is one of very considerable importance in late-keeping Grape-growing. The palate generally rebels for a time at the flavour of such varieties as Gros Guillaume, Gros Colman, Barbarossa, Lady Downes, Trebbiana, &c., after Hamburgs and Muscats have all

been used. These late varieties are very much wanting in the Muscat and vinous flavour of the Muscat of Alexandria and Hamburgs respectively. This deficiency, we are certain, might very generally be much improved or made up by the warmer and earlier treatment pointed out by our correspondent.

Take one or two cases in our own experience bearing on this point. We for some years forced our second house of Black Hamburgs to ripen in June. At the hot end of this house there was one Vine of Black Lady Downes, which bore remarkably well; of course the fruit on it was left hanging on the Vine for many weeks after all the Hamburgs were used. They generally hung through the heat of summer without the slightest signs of shrivelling, and sometimes were not cut till the Hamburgs were shedding their leaves. These Lady Downes attained to a degree of flavour which we have never known in that Grape in any other instance. Last year we had two rods of Gros Guillaume in a Muscat-house, one at the extreme cool end of the house, and the other close to the extreme warm end. The latter ripened at least a month before those at the cold end, and in October and November were vastly superior in flavour to those on the Vine at the cool end of the house. It may be mentioned as another point not unworthy of consideration in this case, that the early-ripened bunches were from a rod grafted on Muscat of Alexandria; and our experience leads us to look on the Muscat as one of the best, if not the very best, stocks for other Vines; and also that this had perhaps a little to do with the flavour. We think there can be no doubt that if Mr Henderson's suggestions were more generally acted upon, less would be heard of the coarseness of some of our otherwise very desirable varieties of Grapes. Some of the Blacks might perhaps not colour so well in a high temperature; but of course the house could be kept cooler while the colouring process is going on, and resumed for a time afterwards, for Grapes are not by any means ripe immediately they are coloured, especially the Black sorts; and we think it of importance that they should be subjected to a high temperature and dry air for a time after the last touch of colour has been assumed.

It would, indeed, be singular if those late varieties of Grapes were not, like other fruits, beneficially influenced by the all-important agents, heat, light, and dry air—agents which render them more sugary, less watery and insipid, and consequently more agreeable to the palate, and more likely to keep well till spring. They are less likely to ferment, damp off, and shrivel when ripened comparatively early than when retarded; and, as is too often the case, ripened when light and heat have considerably declined.

MUSHROOM-FORCING.

I DO not know whether it be correct to say that Mushrooms are forced in winter ; they rather may be said to be grown, for the necessary conditions to their culture are more easily given in winter than in the heat of summer. Mushrooms are at all times in demand, especially in winter, when they may be said to be forced. To grow Mushrooms well, three things are necessary : first, a suitable place ; second, a proper soil or medium to feed their growth ; and third, good spawn.

The Mushroom-house should be a place at once moist and of an equable temperature, where there are no draughts whatever, and no drying influences from hot air or fire-heat, from walls or hot flues, which will absorb the moisture of the house and cause drying currents of air. A cellar under ground is a capital place for a Mushroom-house, because a genial temperature of about 60° can be maintained without fire-heat in all weathers. Mushroom-houses are, however, generally built against the back of walls facing north, with shelves of more or less substantial character in tiers, with which arrangement we find no fault. The roof of the Mushroom-house, like that of the ice-house, would be better thatched than slated ; if not so, it should be lathed and plastered inside, with plenty of space between the slates and plaster, to obviate extremes of cold and heat from the outside acting on the slates and thence on the atmosphere of the house.

The shelves of the Mushroom-house are generally made of strong slabs of wood, the bottom and sides close like a box ; sometimes of slate ; and we have known a Mushroom-house with the shelves of brick arches on cast-iron pillars, with the front of the shelves of cast-iron, than which nothing could be more substantial and lasting. Mushroom-house shelves made of any wood are extremely liable to decay, and consequently are often wanting repairs. But still we prefer the wooden shelf, and probably a very perishable form of one, but the one of all others which we think the Mushroom-shelf ought to be. We should prefer them made of open work, with narrow rails of oak or good deal, leaving about 4 inches between each rail both in the bottom and sides, or no rails at all at the sides, but simply make the sides of turf when the beds are being made, and all the better if the shelves did not touch either the back or front walls of the house, but one broad tier of shelves down the middle of the house ; if it be wide enough, two tiers of shelves. We consider solid shelves an entire mistake in Mushroom-growing, which we have proved to our own abundant satisfaction, as Mushrooms will grow just as well out of the bottom and sides of the bed as over the top surface. Indeed the French have long ago recognised this fact in the preparation of their beds in the sub-

terranean pits under Paris and elsewhere, by making them in high narrow ridges, so as to present the largest possible amount of bearing surface in a given space, as is graphically described and illustrated in Mr Robinson's book, 'The Parks and Promenades of Paris.'

The shelves may be of any convenient length or width, but we consider 9 inches abundantly deep enough, for a great body of dung is not at all necessary to successful Mushroom-growing; indeed we are satisfied that, like thick beds of fresh tan in Pine-growing, much mischief and disappointment are caused by over-thick beds heating and steaming and fermenting after they are made up and spawned. We believe that Mushroom-growing, like Pine-growing, is a much simpler gardening feat than is generally supposed, and that overdoing the thing is the cause of much failure. We therefore recommend the bed of dung to be always less than a foot thick; we find it amply sufficient.

The shelves of our house are divided into sections 9 feet long by 4 feet wide, which we find a very good arrangement; and by making up sometimes one and sometimes two divisions a fortnight, a regular supply of Mushrooms comes in, we believe sufficient to supply the largest family; for no family that we know requires Mushrooms by the peck per day, but most cooks can do with two quarts of good Mushrooms daily. If the house is well constructed or is under ground, very little heating is necessary; two pipes, however, should pass along the house to be used when occasion may require. Some ferment the dung inside the house, from which a moist heat is derived; but this we do not practise, preferring the pipes when necessary. We have also grown good crops of Mushrooms with the assistance of flues carefully heated. The second essential to Mushroom-growing is stable manure from hard-fed horses, as the dung is then in a hard and dry state when brought from the stable, and it is no doubt richer than the dung from horses fed on green food or slops. If possible it should be brought from the stables direct, without being exposed to rain or allowed to lie in a heap long to ferment. When brought to the garden the roughest of the litter should be shaken out and the manure spread out in an open shed not too thick, to prevent its heating, for we deprecate the practice of throwing up the manure in a heap to heat, ferment, and dry. By that means all the best qualities of the manure are dissipated. It should never be violently heated, never made black by fermentation, and never should show the whitish mould attending highly-heated horse-manure: rather aim at keeping the dung cool, and sweeten it by once or twice turning it in a stratum not exceeding 18 inches deep on the floor of the shed. Three good barrow-loads of dry sandy loam should be mixed with every cartful of the dung, which soon absorbs the extra moisture and fixes the ammonia. We keep a large pile of dry maiden loam under cover for

this purpose taken from a pasture, first paring off the turf and taking the spit of soil immediately underneath. This should be got in in August. Where the ground is dry we use a poor yellow sandy loam without any vegetable fibre in it, but fine in texture, just where Mushrooms grow naturally: it answers the purpose well. Leaves in the dung, which some recommend, are objectionable; also the porous part of the turf, because of its tendency to generate spurious fungi in the beds.

Having enough dung ready to make a bed, and supposing the shelf made as described above, begin by laying a layer of dry turf with the grass side inwards all over the bottom, and a turf on edge along the sides, to cover over the open spaces between the spars; this is even not absolutely necessary if turf be scarce, but use the rougher part of the manure instead. Have the dung mixed with the soil on the shed-floor in the proportion named; throw it on the shelf in layers of a few inches at a time, treading it with the feet or beating it with the back of a spade as the work proceeds. If the dung be still thought rather moist, add more soil—better for it to be on the dry side than over moist; and the quantity of soil is no objection, as it is quite as good for the Mushroom crop as the dung, and more in accordance with nature than a body of dung alone. There is little danger of a bed made in that fashion getting too hot or burning the spawn after spawning. A glow of heat in a Mushroom-bed is at all times objectionable, and the sooner the heat from fermentation is gone the better. Two or three days after making, the bed will be ready for spawning. We use trial sticks as a precaution, but we do not find the beds ever to get over hot.

Good spawn is the third essential, for without good spawn all the other trouble will be useless; just like bad vegetable seeds, it is of importance to avoid bad spawn. It is annoying to wait say six weeks in the hope of seeing the looked-for Mushrooms grow, and find that the dung must be cleared out like a spent bed. Good spawn can always be had from respectable seedsmen, especially from those who have a good business in the article: some have got a name for good spawn, but we avoid naming tradesmen. Spawn will keep good for years, provided it be kept in a thoroughly dry and rather warm place. Good spawn will be known by its fresh appearance: on breaking the cakes the spawn should show a very fine silky flocky appearance pervading the bulk of the cake; if of a very packthready appearance it is not so good, although a few packthreads through it will be no objection; it should also have a sweet mushroomy smell, which an experienced person at once knows.

To spawn the beds, the cakes should be broken up into pieces the size of hens' eggs or less, and planted into the surface of the bed with

a trowel, about 2 inches deep and 8 or 9 inches apart; but not even the smallest morsel should be lost, as the smallest bit will grow under good conditions like yeast in a barrel. Beat the surface firm after spawning; then cover over the surface of the bed with $1\frac{1}{2}$ inch of the same soil which is used for mixing in the dung; beat it well; then give it a slight moistening with a fine-rosed watering-pot, and beat it again; then cover the bed over with 1 inch of dry wheat-straw to keep all comfortable, and keep the bed from changes of temperature and draughts when the door is opened. A slight sweat will rise from the bed, and care must be taken that the straw does not become too wet and clammy; if so, it must be removed and dry substituted, until the Mushrooms appear, which will be in about six to eight weeks. A steady temperature of about 55° to 60° suits the Mushroom best, with a moist atmosphere. If the house should become too dry from the use of the pipes, or from its natural position inducing dryness, the floors and walls should be moistened with the syringe in the morning, avoiding wetting the beds or the straw. If all has gone on well at the proper time, the Mushrooms will come up in large clusters all over the surface of the bed, bottom and sides indifferently—as we have at this present time some beds so thick that one's finger can scarcely be put down where Mushrooms are not. We never care about watering Mushroom-beds: when a bed becomes exhausted it is better to clear it out and make up anew, than to water and wait for a very doubtful return. With abundant moisture in the house it is wonderful the amount of Mushrooms a seemingly dry bed will yield before exhaustion.

About the gathering of Mushrooms. Often a whole bunch can be lifted bodily off the bed all of the right size for the cook; but if not all of the proper size, those which want gathering should be twisted out of the bunch without injuring the others. They are most in request of the button size; and perhaps a bed lasts longer when they are gathered of that size. They should never be cut off and the stump left to rot and spoil the young ones by its side: a little dry soil should be scraped into the hole; or better still, a little dropped into the holes from the hand. All economical French cooks like the Mushrooms sent in with the stalks entire: only the very bottom of the stalks should be cut off, where the soil may be sticking to it. The stalks are quite good, palatable and eatable, and it is sheer waste to throw them away; and if the cook do not send the stalks to table, they can be dished up in various ways for the servants' hall.

THE SQUIRE'S GARDENER.

NOTES ON HARDY CONIFERS.

THUJA (THE AMERICAN ARBORVITÆ).

THIS is a small but very interesting genus of evergreen shrubs and bushy trees, for the most part natives of North America, all of them very ornamental, thoroughly hardy, and of remarkably free growth in almost every kind of soil.

All the species and varieties possess in a greater or less degree that upright, densely branched, conical habit of growth, so characteristic of the Cypresses, but so distinct in appearance and so uniformly handsome, that they are rarely absent even in small collections of choice shrubs.

Of the sorts in cultivation, the following deserve special mention:—

Occidentalis (*the Western Arborvite*) is indigenous to, and occurs in great abundance over, a large area in Canada and the United States, where it is commonly called the “White Cedar,” and from whence it was first introduced into Britain about 1596. It is usually found growing in low sheltered swamps, and on the moist banks of rivers, where the soil is of a peaty or rich alluvial character, rising to heights of from 30 to 50 feet.

The timber being close-grained and remarkably durable, as well as light and easily wrought, is extensively used in America for fencing, house-building, and a variety of other purposes.

As an ornamental shrub, for which it is alone cultivated in this country, it has long been highly popular; its symmetry of outline, profusion of graceful plummy branches, along with its beautiful light-green summer's tint, renders its presence ever welcome, either in mixed groups of shrubs, or as single specimens on the lawn; and though it assumes a somewhat sombre russet brown on the approach of winter, it is even at that season, as a contrast to the lively greens of many of the Cypresses and Junipers, strikingly pleasing and effective.

From its dense bushy habit and facility of growth in almost all soils and situations, if moderately moist, this species is well adapted for forming garden-screens or ornamental hedges, which, if the operation is performed in early summer, may be pruned or trimmed into any shape with the greatest impunity.

The following varieties are distinct and handsome, equally hardy with the species, and well worthy of cultivation among select shrubs: *Ericoides*, a neat dwarf bushy plant, with a great profusion of tiny heath-like branches—called by the American nurserymen, with whom it originated, *Tom Thumb*—is useful for planting in front of groups of the larger shrubs, in flower-garden beds, or on lawns of limited extent. *Compacta* differs from the species in having a dwarfer habit,

the branches more compressed, and produced in greater abundance ; it is one of the prettiest of cone-shaped lawn specimen-plants. *Pendula* is a curious weeping form, somewhat sparingly branched, and is an interesting variety in a collection. *Variiegata* has some of the branchlets tinted with a bright golden variegation, and though more slender than the species, is a desirable lawn-plant.

Plicata (*the Plaited-leaved Arborvite*) is found wild on the western shores of North America, particularly at Nootka Sound, growing in deep alluvial soils to heights of from 20 to 30 feet. This fine species was introduced into Britain about 1769, and has proved itself to be a thoroughly hardy and free-growing ornamental shrub, of a compact, conical habit of growth, abundantly furnished with short, stout, horizontal branches, much divided into thick branchlets disposed in regular rows, and these, overlapping each other, give the plant that peculiar appearance which doubtless suggested the specific name *Plicata*, or *Plaited*. In summer the branchlets are of a light, slightly glaucous green, changing in winter to a rich brownish tint.

Though one of the commonest of our hardy Coniferous shrubs, it is well worthy of a place of honour among the rarest and most select, and handsome enough for a lawn, or any other site where a distinct symmetrical evergreen of moderate size is desirable.

It thrives best in a deep, cool, moderately moist soil, and should always be allowed plenty of space to develop its branches on every side.

The variety *Minima* is a neat-growing, bushy plant, very useful for planting on and around rockeries in small garden beds, or in terrace vases ; and as it is quite as hardy as the parent, thrives in very exposed situations. Another well-known form called *Wareana*, formerly classed as a distinct species, but now by most authorities regarded as only a variety of *Plicata*, has a slightly more robust habit of growth—a distinction, however, that is not always very obvious, and which seems to depend very much upon the soil, or other circumstances under which the plants are grown.

Gigantea (*the Tall Arborvite*).—This species, hitherto known and distributed under the names *Menziesii* and *Lobbii*, is now ascertained to be the true *Gigantea* first described by Nuttall in his ‘*Plants of the Rocky Mountains*,’ the plant erroneously so named being the *Libocedrus decurrens*, a tree that, even under the most favourable circumstances, in its native woods rarely rises higher than 50 feet, whereas *Gigantea* grows to heights of from 100 to 150 feet.

This grand tree is found wild at altitudes of from 4000 to 5000 feet, over immense tracts on the north-west coast of America, and in California, from whence seeds were first sent home by Jeffrey in 1854.

Though as yet only seen in this country as a large shrub, or at most but beginning to assume the tree form, and chiefly confined to parks and pleasure-grounds, it has been widely distributed and extensively planted, so that its thorough hardiness, freeness and rapidity of growth in almost every district and variety of soil, have been amply demonstrated, and there is every reason to believe that it will yet come to be regarded as one of the most valuable of British forest-trees.

In a young state, and as seen in our pinetums and parks, it is one of the most beautiful of its tribe, having a handsome conical habit of growth, clothed to the ground with long graceful branches, much divided into feathery branchlets, of a shining, warm green colour, which is maintained all over the year.

Among varieties, of which many may be detected in almost every lot of seedlings, Craigiana is the most distinct and constant. This fine form was raised from the original seeds sent here by Jeffrey, and differs from the species chiefly in having a more open habit of growth, with the branches slightly pendant, and turned up at the extremities. It is quite as hardy and of as free growth as the parent, and makes a very pretty specimen-plant. HUGH FRASER.

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WINTER-FLOWERING ORCHIDS.

ODONTOGLOSSUMS.

WE have here a genus of plants from the highlands or mountain-ranges of the New World, and particularly noted for their adaptability to what is popularly termed "cool treatment." Nearly all the species of this large genus are very handsome, neat in habit, and bear a rich profusion of blossoms.

Odontoglossa are favourites with most Orchid-growers, as they may be grown without any great expense either for fuel or labour.

The best erection in which to cultivate these plants is a low span-roof house or pit. The house need not be more than 8 feet high in the centre, and the side walls 5 feet. The breadth of the house may be 12 feet; this gives 4 feet for the side benches or tables and 4 feet for the path. Provision must be made for thorough ventilation, covering the openings with perforated zinc or wire gauze so as to exclude cold currents of air or draughts. A house of these dimensions,

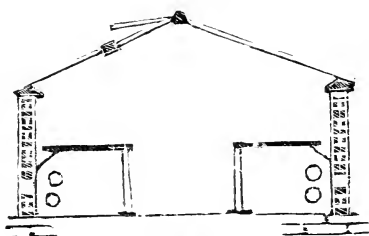


FIG 8.

and 40 to 50 feet in length, is heated sufficiently by a flow and return pipe passing round it under the side benches. Or in other words, a house in which these plants may be grown perfectly, requires no more piping than is considered necessary for heating an ordinary greenhouse. The benches should be of slate, on supports of either iron or wood, the former being preferable on account of its durability. These benches should be covered either with Derbyshire spar, or cannel-coal broken up into small nodules, upon which the pots can be arranged. Cannel-coal always appears clean, and the dull black colour is not at all conspicuous, while it efficiently answers every purpose for which spar or shells are used. Most *Odontoglots* grow freely in a compost of fibrous peat, some dried *horse-droppings*, chopped *Sphagnum*, moss, and sand. The pots must be thoroughly clean and dry, and plenty of drainage must be used, in order that all superfluous moisture may pass away readily. *Odontoglots* require an abundant supply of moisture when in a healthy growing condition; but, like other plants, they are injured by stagnant rottenness at the root. We will now glance at those species best worth cultivating for their winter-flowering qualities.

O. Alexandre.—This is one of the most beautiful species in the genus, and deservedly popular with Orchid-growers. Its flowers vary from pure white to white suffused with rosy lilac, and heavily blotched on the lip and sepals with brown. A remarkably fine specimen flowered at Meadow Bank some time ago bearing 120 flowers, 56 of which were borne on one spike. I saw many plants of this species growing in a brick pit at Meadow Bank last summer, and they were in very fine condition; while the expense of cultivation would not be more than that of greenhouse plants in general. This species should be grown by the dozen where there is convenience, as where a good stock is kept, it may be had in bloom throughout the year with but little intermission. Its flowers last a long time in beauty. After potting, this and all other *Odontoglots* should be surfaced with a layer of fresh green *Sphagnum*, which not only conceals the compost and gives the pot-tops a clean and fresh appearance, but also maintains an equable state of moisture at the root.

O. cristatum.—This is not so showy as some species, but highly interesting, and worth cultivating for variety in a collection. Its flower-spikes are slender, often branched, and the flowers yellowish, heavily blotched with purplish brown. The crest of the lip is white, and in some varieties a large proportion of the lip is also white. It flowers freely during the winter, and lasts a month or six weeks in perfection.

O. Cervantesii.—A very pretty dwarf species, often known in gardens as *O. membranaceum*, introduced from Western Mexico in 1845. The plant has small, angular, one-leaved, pseudo-bulbs, and produces a

flower-spike from 4 to 6 inches long, bearing four or five delicate membranaceous flowers, more or less of a soft rosy colour. The bases of the floral segments are marked with transverse bars of brown or brownish crimson, lip white. It is a pretty little species, well worth growing, and lasts from three to four weeks in flower.

O. cordatum.—A distinct species found in Mexico and Guatemala, and introduced to this country about 1837. In bulbs and foliage it somewhat resembles *O. maculatum*, but is very distinct from that species when in flower. It bears numerous erect spikes of flowers when well established, sepals and petals about $1\frac{1}{2}$ inch long, lanceolate, the apices being attenuate and often wavy. In colour they are very remarkable, being heavily blotched with a dark brown (of peculiar richness in some varieties), on a ground colour of pale greenish yellow. The lip is heart-shaped, of a white colour, blotched, and often margined with brown, and furnished with a pubescent bilobed crest.

O. roseum.—This species flowers very profusely during winter and spring, lasting from three to four weeks in perfection.

O. grande.—This is an old but at the same time truly magnificent species, blooming during the autumn and winter months. This species, together with *O. Insleayii*, *O. citrosimum*, *O. Krameri*, *O. Phalænopsis*, likes a few degrees more heat than the generality of *Odontoglossum*, and will be found to succeed better in a *Cattleya* house, or in an intermediate temperature, rather than in the cool house. *O. Phalænopsis* is especially sensitive to either extremes of temperature or stagnant moisture. Well-established plants of *O. grande* make fine subjects for exhibition, and produce a profusion of their great golden yellow, heavily blotched and barred flowers. No other *Odontoglossum* is so effective as this when well grown, and it has the good quality of retaining its gorgeous beauty for a considerable period.

O. luteo-purpureum.—We have in cultivation several forms of this plant which are frequently sold and named *O. radiatum* or *O. Hallii*. It is a fine plant, and good specimens bear from twenty to thirty flowers on a spike 4 or 5 feet long. A fine specimen of the “*Hallii* variety” flowered at Ferniehurst, bearing thirty flowers, some of them $3\frac{1}{2}$ inches across, on a branched spike nearly 5 feet long. Three smaller spikes were borne by the plant at the same time. The sepals and petals vary greatly in breadth in different forms, and are of a yellow colour heavily blotched with brown. The lip is broad, with a white fimbriate margin, the disc being blotched with brownish crimson: some varieties of this plant are very richly coloured.

O. Insleayii.—This is another fine winter-flowering species from Mexico, somewhat resembling *O. grande* in habit. It is a very free-flowering species. Sepals and petals yellow, barred with brown. Lip of the

richest golden yellow, often spotted with crimson. It flowers all through the dull season of the year, and lasts in beauty from three weeks to a month.

O. Pescatorei.—This is a lovely species, and, like its congener *O. Alexandra*, blooms at different times during the season. I have recently seen it in great beauty in several places, and its pearly blossoms are doubly valuable at this dull period of the year. There are several varieties of this species, some nearly pure white, others spotted and blotched with dense purple, but all are beautiful. I measured a flower with Mr Denning in Lord Londesborough's fine collection, and found it fully 3 inches across. This is one of the finest varieties I have seen, its sepals and petals being very broad, and of good substance and colour. This plant roots vigorously in the compost above named, and grows well in the cool house. It was introduced from New Granada about 1851, and is one of the finest species in this beautiful genus. It lasts from three to five weeks in flower.

O. pulchellum.—This is a pretty little white flowered species from Mexico, and was introduced some time before 1841. There are several varieties of this plant, some bearing spikes of flowers very little larger than *Convallaria majalis* (Lily of the Valley), while others bear flowers an inch in diameter.

The sepals and petals are of a pure crystalline white colour. The lip is bent nearly at right angles, and has a crest shaped like a **W**, of a golden or lemon-yellow colour spotted with crimson. The delicate flowers are borne nine or ten together on erect spikes, among the dark grass, like leaves. It is a profuse bloomer when thoroughly established, and its fragrant flowers come in very acceptably for bouquets. It lasts a month or even six weeks in perfection.

O. Rossii.—This, like *O. Cervantesii*, is a very dwarf species. Still, one variety bears very fine flowers; its blossoms are borne two or three together on a spike 5 or 6 inches long. Sepals of a creamy white colour, spotted or blotched with purplish brown; petals broad, pure white, barred transversely with purple. Lip pure white, with a golden crest. This pretty little species should be in every collection. It flowers about this time of the year or a little earlier, and lasts about a month in flower. The best variety is known as *O. Rossii superbum* in gardens.

O. triumphans.—This is a very rare plant, and at the same time one of great beauty. It may be considered the best of the yellow-flowered section, if we except *O. grande*. The flowers are 3 to 4 inches across, borne on a nodding spike. Sepals and petals of the richest golden yellow, blotched with brown. Lips white, with a golden crest, and the apex tipped with rosy purple. This is a very valuable plant, blooming at different seasons, but generally during the winter and spring. The

habit of this plant somewhat resembles that of *O. Pescatorei*, and the bulbs are sometimes spotted with brown as in that species.

O. Uro-Skinnerii.—This plant has great fat speckled pseudo-bulbs and broad foliage, and is altogether very distinct, both in habit and flower. Like most other Orchids, it varies considerably in the size and colour of its flowers, some varieties being very richly tinted. Sepals and petals yellowish green, more or less heavily blotched with purple brown. Lip broadish, cordate, of a white colour mottled with rose. This plant grows well in the coolest house, but requires an abundant supply of moisture nearly all the year.

It bears ten to twenty flowers on spikes from 2 to 3 feet long, when well established and in good health. Guatemala.

O. Bictoniense.—This is another species from Guatemala, having been introduced in 1837. It bears numerous erect spikes during the winter and spring months. These spikes are from 18 inches to nearly 3 feet high on good specimens, and bear fifteen to twenty flowers, which open in gradual succession. Flowers about 1 inch across, of a yellow colour blotched with brown. Lip often white, sometimes of the deepest rose. It sports into several varieties, the best of which are very ornamental.

F. W. B.



A HIGHER TEMPERATURE FOR LATE GRAPES.

THE old adage "that there is nothing new under the sun," I suppose will hold good in this case also, although I am not aware of ever having seen this point in late Grape-culture mentioned in any of the many and able "treatises" that have of late been written on the cultivation of the Vine. I would recommend the growing all late Grapes in higher temperature than they are generally grown in, and also that they should be started earlier than is usual, so that they may get the benefit of the sun before its power begins to wane in autumn, so as to bring up all the properties which constitute high flavour, and which is not to be effected without plenty of bright sun. And now that it is proved beyond a doubt that Grapes cut and bottled will keep for a long time without any detriment to the flavour, they can all be cut by the second week in January, the Vines pruned, and got ready to start by the first week in March, so that the ripening process may be completed before the end of August, when the sun has still great power; and, in my opinion, the last two months' treatment goes a long way towards the high finish of Grapes, if all other things have been going on right through the early part of the season. Some may object to ripening Grapes so early that have to hang so long; but they will keep

as long, if not longer, than those ripened six weeks later. What has caused the complaint this winter of Grapes not keeping well? The want of sun and heat to finish them properly the past cold, wet, sunless autumn. All the fire-heat that could be given did not make up for the rays of the sun. Our late house was quite ripe by the beginning of September, and I have scarcely lost a berry; and they are as fresh and plump now—the middle of January—as need be. All those sorts that have been subjected to a high temperature are also high in quality, even Muscats and Frontignac, &c.; and what can be worse than green Muscats? How often do we see at exhibitions early in the season Muscats quite green, which have perhaps been grown along with Hamburgs for this special object, but which, if the framers of many of the schedules of flower-shows were to adhere to their rules, would be discarded as unfit for exhibition, far less competition, and rightly so! Even the Hamburg is not so high in flavour when grown in what is termed a cool house. What has more particularly led me to call attention to this is, that I have Barbarossa and Trebbiana in a Muscat-house, which is generally started about the middle of February and ripens in August. The Muscats have that fine amber colour which invariably proves that high flavour is not wanting. Trebbiana was this last season even higher coloured than usual, and the flavour much appreciated by some. This variety we cut earlier than Barbarossa. The latter was allowed to hang until December, although, as far as ripening is concerned, it could have been cut in September. When sent to table, there being a large party, one of the gentlemen, being a great connoisseur of Grapes, could not make out what Grape it was. When told the treatment it had received, his answer was, “From the quality and flavour of the fruit, I can uphold every word you say.” Having sent a few to the Editor of the ‘Gardener’ from the same Vine, his verdict was the same. If Lady Downes, Alicant, Seacliffe Black, Madresfield Court, and Mrs Pince, were all, say, started in March, and treated with a Muscat-house temperature all through the season, I feel perfectly satisfied that the flavour would be higher; also there would not be the so common complaints against their thick skins. Mrs Pince, treated thus, will rise higher in estimation than it stands at present, for it has then a decided smack of the Muscat, but not when newly ripened. Then there is Raisin de Calabria, often seen in late houses similar to the green Muscat spoken of. This I have at present as fine in colour as the finest finished Muscat, and at this season it is most useful when a quantity of dishes are required. There is another point that I think well worthy of consideration—namely, allowing the fruit to hang so long on the Vines. I believe it to be as injurious to them, if not more so, as early forcing; for a large crop hanging up to the month of February and March must, to a

certain extent, always be drawing nourishment at a time when everything should be dormant. The above simple statements I do not propound as new, but having proved them by the superior quality of the fruit grown, I am so convinced of the good results of this mode of treatment that I shall follow it up more closely in the coming season. A late house of Barbarossa and Gros Colman, grown and treated in this way, will be little inferior to a house of Hamburgs. I have little hesitation in saying that they would be better than the latter at the time they are required, which would be after New Year's Day. I also feel convinced that there are varieties of Barbarossa, and one of them more free in fruiting than the other.

A. HENDERSON.

THORESBY GARDENS.

PHYLLOXERA VASTATRIX.

MR DUNN, Dalkeith Gardens, who for three years fought a most determined and successful battle at Powerscourt, in Ireland, with this Vine-destroyer, has kindly furnished us with some particulars regarding it, which were not at first intended for publication, but which he has permitted us to lay before our readers; and we do not know of any one who has had more experience in watching and dealing with this insect, nor any whose observations could be more reliable. Mr Dunn writes:—"I am very glad to hear that you have decided upon burning all your infected Vines and removing all the borders, and at the same time thoroughly cleansing every part of the houses, making sure that not a vestige of the insidious pest is left. By doing so you will have much more confidence that you have thoroughly stamped it out. Had I to deal with it again I would certainly deal with it in the same way, unless I had very special reasons for cleaning and saving the Vines, though I hope I may never have the task of dealing with it again. One attack from so dreadful a scourge is quite enough in a lifetime. By taking proper means, I have not the slightest doubt but that the very worst infected vineries can be effectually cleansed; for with all my three years' experience of it, I never found that the insect lived more than 48 hours when isolated from the Vine. Indeed, in all the numerous experiments I tried in placing it on other plants than the Vine tribe, it never lived 48 hours; but on the Vine it prospered and increased with amazing rapidity. I tried it on American varieties, such as Concord, Isabella, Sombruska, and the result was the same. There were Camellias, Azaleas, Cacti, Palms, Fuchsias, Pelargoniums, &c., with various sorts of bedding-plants in the vineries, and although their foliage in some cases was put amongst the infected Vine-leaves and

their roots, in other cases running through their pots into the border amongst the infected Vine-roots, I never found an insect feeding on any plant except the Vine, and only in a very few instances did I find them trespassing on any other plant ; and when I did find them, I usually took them to my office and placed them carefully under glasses, where I could watch them, and their life was always cut short within 48 hours. I tried to get it established on various vegetables and fruit-trees, but it would not feed nor live on them. There were Figs in the vineries, and the pest never touched them. Consequently my experience coincides with your own in that the Phylloxera will not deposit its eggs nor live in any other plant but the Vine.

“With regard to the eggs, I have kept roots and leaves with eggs and live insects all through the winter ; but as soon as the sap of the leaves and roots was exhausted, the eggs became shrivelled and never produced live insects. I took pieces of roots infested with the insect and placed them in the soil into which clean Vines were potted, and in 14 days the roots of the pot-Vine were swarming with insects.

“Before I became sufficiently cognisant of the habits of the little devourer, the galls quite covered the under sides of hundreds of the young leaves, and the young wood was perfectly riddled with holes or punctures into which they had burrowed, feeding on the sap and depositing their eggs. I could compare their operations on the young wood to nothing but small-pox, so thick did they puncture it. The two following years I did not allow it to get ahead much, for I picked off and burned the infected leaves.

“I had the insect nearly as bad in the outside border as inside, but the borders were covered with leaves and strong wooden shutters from September to May, and were consequently comparatively dry and warm. There can be no doubt they thrive best in dry warm quarters, and they could be easily drowned, but the difficulty lies in getting at them. The small roots were eaten up. When lifting the Vines, I never found any larger than a thick quill, and the strong roots were infested up to the collars of the Vines.”

Such are Mr Dunn's interesting remarks on this scourge. After trying numerous decoctions, such as salt and water, diluted turpentine, &c., he found that though it kept the insect in check, it could never be eradicated by such means without using the mixtures strong enough to kill the Vines too. He then lifted the Vines and cleansed them. He relates his method of doing so in the 'Transactions of the Horticultural Society.' “I closely pruned the young wood, stripped the stem clear of all loose bark, and then thoroughly washed them with a stiff brush and pure water. Having thus cleansed the tops, I began at the roots by lifting them carefully out of the soil and cutting away

all the badly-infested parts, going patiently over those left and cutting clean off all spots of canker, showing where the insects were or had been, then washing them in the same manner as I had done the stems, going over them two or three times to make sure they were thoroughly clean, then dusting them over with an equal mixture of dry soot and newly-slaked lime, replanting them in some fresh soil, mixing a little soot and lime amongst it while filling it in, and taking care to pick out every morsel of old root or stick that could be seen. I then washed the house thoroughly in every part, and painted it with spirits of turpentine to destroy any insects that might be missed in the washing, painting the Vine with the usual mixture of clay, soot, sulphur, soft-soap, and tobacco, adding two ounces of turpentine, and one of nux vomica to every gallon of the mixture, and then tied them in their places, leaving them alone until they broke into growth in April, which they did in a most satisfactory manner, and made strong growth during the summer, never showing the signs of an insect on either root or stem." This was done in 1868, and the Vines have prospered and kept free from Phylloxera, showing that Mr Dunn had done the work with a thoroughness which is characteristic of him. He is the only person who in this or any other country, that we are aware of, has thrown so much light on and destroyed this pest, at the same time successfully saving the Vines; and we have no hesitation in saying that if our London Horticultural, or any other Horticultural Society, can see their way to make him some reward for so successful an undertaking, that they will not be overstepping the limits of their duty. No matter what course Mr Dunn might pursue in such a case again, the fact that he saved his Vines remains the same, and deserves more credit than he who, to destroy the pest, destroys the Vines also, although the latter procedure is doubtless attended with less uncertainty.

EDITOR.



FLORIST FLOWERS.

THE DAHLIA.

AMONGST florist flowers none maintains a more eminent standing in public regard than the Dahlia. Looking at it in every enjoyable aspect, it is certainly worthy of the high esteem in which it is held. Do we wish an object bold and massive, stately and unique? do we desire a grand floral row, a centre to a clump of lesser flowers? For these purposes, as well as its arrangement into large masses, its adaptability is most perfect.

We could swell this paper to an unusual length were we to attempt to describe all the qualities of the Dahlia. The Dahlia is a native of Mexico, and was brought to England in the September of 1789 by the Marchioness of Bute, who brought it from Spain; but when it was introduced from its native habita-

tion to that country I am unable to say. Some people credit a German named Dahl (a botanist) with the meritorious service. But I am not going to attempt its history, but to describe its culture.

Propagation.—In referring to the different modes by which the Dahlia is multiplied, we will first describe that of propagation by cuttings taken from the roots of the previous year's plants. Those roots, whether they have been wintered in a stable-loft, a dry-room, below the greenhouse stage, or in any other convenient place, should now (Feb. 1) be in a proper condition for starting into fresh growths. So it is taken for granted that the intending cultivator has already prepared a nice sweetened hotbed with sufficient heat, without any rank steam rising from the bed. First cover this bed with a few inches of equal parts sand and leaf-mould or tan, or even light garden soil. Allow this fresh surface to get warmed, then test its heat by plunging a thermometer into it for a night; and should it indicate no higher than 85°, the roots may be placed on the surface, and a sprinkling of sand thrown over the tubers merely to fill up the crevices. Attach all the names to the respective roots, and stand them, bottom down, closely together on the bed before proceeding to cover any of them. The frame should be tightly glazed, so that no water falls amongst the roots to cause rot; but rather endeavour to keep the inside of the frame rather dry, admitting air on every favourable occasion, but not too abundantly. Shoots will soon be forthcoming, and they should be taken off when they are about 3 inches long, and potted singly in sand and leaf-mould in thumb-pots, or in larger-sized pots in threes or fours, around the edge of the pots. Moisten the soil after completing the operation as quickly as possible, for it is a bad plan to allow the shoots to flag while in the act of preparing cuttings. All propagators can tell that nothing is worse for any cutting than to allow it to flag: indeed, were it possible to have the operation done in the time it takes to think over it, ninety per cent of the cuttings would never flag; but many of them do flag to rise no more. In making cuttings, one more caution—see that the knife has an edge of razor keenness; cut the cuttings across directly below the joint in the solid. Plunge the pots to their rims into gentle bottom-heat, and keep them moist, preventing flagging by shading and keeping the frame rather close. When they have struck roots, they should then be potted singly into 4-inch pots in rich loamy soil, well draining the pots. Put them back into heat until they get established; then they may be at once transferred to cold frames to harden, being strictly watchful that frost never reaches them under any condition.

By a constant routine of airing, covering to protect from frost, and attentiveness as regards watering, the plants will be quite ready to be fully exposed without the lights in the last week of May; and early in June they may be planted out where they are to flower in summer and autumn.

Another mode of propagating is to take young shoots from the branches during summer, strike them in smart bottom-heat singly, in small pots, afford the necessary protection from frost while winter lasts, and plunge them into moderate heat in spring. Remove all but one stem, and when sufficiently strong give a larger shift to those which push away strongly.

There is also practised a method of propagation by means of division of the roots. This is accomplished simply by splitting the roots into as many portions as there are stems. Those divisions are at once potted into whatever pots their individual dimensions require, and then put back into the frame like the others until established. Grafting is also sometimes resorted to with scarce and bad-

keeping kinds. Grafting is usually performed in the autumn; but it is scarcely worth while discussing the subject under this head further, my main object being to assist the novice,—and the instructions already offered are the most suitable.

General Management.—The Dahlia delights in rich and abundant feeding, coupled with a bed of deep rather light soil, properly drained. Rotten old turf is the best of soils for the Dahlia, adding, of course, a sufficiency of manure to make it rich. The ground should be well trenched in autumn, and thrown up into rough ridges, so that frost may act upon it. In April have the ground forked over again, after overspreading its surface with a light covering of well-reduced cow-manure. Divide the allotted ground into beds of 4 or 5 feet, with a narrow path between each bed. In the last week of May, or early in June, plant about 5 feet apart along the centre of each bed, and be careful to preserve the balls entire in planting. After planting, give each plant a good watering, which should be repeated twice a-week afterwards should dry weather succeed the planting. Syringe overhead in the evening after dry hot days; support each leader by an upright neat stake, and tie as the shoot advances; and subsequently, when side branches are produced, select four of the strongest that are at convenient distances from each other to form a uniform plant; put a stout stake to each of these, and cut the remaining shoots away. When superior flowers are the object, pinch out all the lateral shoots which appear on the permanent growths, and thin the flower-buds less or more, according to the habit of the variety: some are more rampant than others in their growth, and more prolific in flowers, and they should be thinned accordingly. As soon as summer heat sets in, all the beds should be covered to the depth of 3 or 4 inches with rich cow-manure; and should this be offensive to the eye, cover it with a little soil. As the flowers advance in size and formation, let the plants have plenty of moderately strong liquid manure once a-week. When flowers are wanted for exhibition, it is scarcely necessary to say anything about the essential shades to protect them from sun, rain, and wind. Nothing is better than an inverted flower-pot placed over the flower on the sliding piece of board which acts as a table or support for the chosen flowers.

Earwigs are the devouring pest of the Dahlia, and many are the schemes adopted for their destruction. Nothing is better than scattering pieces of the stalks of Beans or Hemlock around the plants. This, and inverting small pots with a little dry moss in them over the points of the stakes, allure the enemy: these traps ought to be examined each morning. The hunter should be provided with a pail of hot water, into which to blow the earwigs out of the tubes, and drop them out of the pots. By this means these insects may be kept under in gardens generally, although, where the ground is wholly sand, there they may be found in tens of thousands, hanging about the walls, resembling hives of bees broken into detachments. Of course, it would be useless to attempt the culture of Dahlias where strong plants of Verbenas disappear in a night.

PREPARING FOR AND PROTECTING THE ROOTS DURING WINTER.

When frost has cut down the plants, they should at once be cut over within a few inches of the ground. Have all their names secured to the stem by means of wire, and then take them carefully up with a fork, preserving their roots entire; place them closely together—stems downward—in baskets, so that the tubers may be well exposed to dry in the sun. This will also assist the escape of any juice issuing from the cut in the stem. In a few days the roots may be

stored away where frost or damp cannot reach them, and all the attention they require in winter is to prevent mould getting a footing, and removing decayed roots. Nothing is more effectual in removing mould than to brush them over, giving plenty of fresh air at the time to carry away all damp.

What we have next to consider is a select list of the various classes, taking first the

SHOW FLOWERS.

Anne Keynes—a grand full flower, colour white, richly tipped lilac. Andrew Dodds—most acceptable for its colour, being deep dark maroon, with a velvety crimson glow; excellent. Alexandra—white, beautifully touched on the points of the petals with lavender; constant and fine. Aristides—very rich deep crimson. Bullion—golden yellow; splendid. Bob Ridley—glowing red; splendid form. Buttercup—brilliant yellow, excellent outline, immense size. Criterion—rose, shaded with pale lavender; a splendid full-sized flower. Charles Backhouse—when once seen cannot be mistaken; though not one of the largest, it is one of the finest both as regards form and colour, being a dazzling scarlet: should be in every collection. Fann Purchase—is quite perfection in its way; the best yellow extant, both in symmetry and in petal. George Wheeler—lilac, suffused with light purple. Golden Drop—yellow; old, but still keeps its standing. Gipsy King—brownish chocolate; distinct and fine. Lord Napier—purple. Leath—another exquisite flower; ground deep yellow, the petals tipped rose. Lord Derby—splendid self; colour rich dark rose. Mrs Turner—old, but good; white, richly tipped faint rose, at times more boldly than others.

Mrs Coleman—white, laced with strong crimson, very distinct. Princess of Wales—blush and lilac; fine. Scarlet Gem—a good large scarlet flower, of fine symmetry. Sunshine—yellow, shaded red on the tips of the petals, spots of the same occurring here and there. Valentine—white, edged with deep purple. Willie Astin—pale amber; the finest of its order. The following selfs are quite A 1: Memorial—rose; Lord Napier—purple; Purple King; Gazelle—fawn colour. High Sheriff is said to be the darkest flower grown.

FANCY VARIETIES.

Attraction—ground white, mottled and striped purple. Butterfly—rosy scarlet, touched with orange; distinct and beautiful. Billy Button—buff, heavily striped maroon. Stafford Gem—warm soft crimson, distinctly tipped yellow; fine. Miss Joy—deep yellow ground, tipped with white. Mdlle. Nilsson—white, stamped deep rose on the tips of the petals. Octoroon—strangely shaded with purple, striped white; first-rate. Polly Perkins—pale buff, faintly tipped with white; a good sort. Model—a handsome variety, very constant; colour creamy white, striped with deep red. Prince of Wales—light yellow, delicately striped; fine. Queen Mab—dark red, tipped with white; very constant in character. Reliance—violet rose, striped maroon. Startler—exceedingly dark, tipped with white; excellent. Sparkler—ground white, densely tipped purple. Jean Sealey (new)—deep lilac, striped purple. Richard Dean (new)—yellow striped, deep crimson; fine flower. Flora Wyatt (new)—first in quality; colour deep yellow, streaked red.

NEW SELFS, OR SHOW FLOWERS.

Alice—peach, suffused lilac; very pretty. Andromeda—yellow, veined, and tipped with bright red; novel. Harvard—delicate pink, of exquisite petal and shape, great depth; fine habit and constant. M'Mahon—pale ground, heavily

tipped and suffused rich purple. Monarch—buff, mottled and striped dull crimson; large and fine. Acme of Perfection—certainly one of the finest yellow flowers extant, whether for form or colour. Bishop of Durham—faint salmon colour, neat, of moderate size; fine. Earl of Radnor—deep plum, glowing colour; a distinct pure self. Incomparable—a charming flower; ground yellow, tipped with deep crimson. George Peabody—distinct and good; maroon, tipped with brick red.

A. KERR.



HINTS FOR AMATEURS.—FEBRUARY.

PRUNING and tying up trees will be like other operations—much retarded by the continued wet weather. All this work should now be carried on briskly, as every day will bring abundance of work with it. Limewash on moss-covered stems will help to destroy the pest, as well as eradicate insects. Where time can be spared, old trees should be gone over with a blunt-edged instrument, and all destructive vegetable matter scraped off. Peaches and Nectarines may remain unpruned till the end of the month. Some of the best cultivators we ever knew do not use a knife on these trees till the blooms are swelling; and they are tied up just before the buds open. The keeping of them from the walls retards the crop and keeps it longer out of danger. It is well to break up all surfaces over fruit-tree roots after tying and nailing is finished. A good dressing of manure may do good service if the roots are not too far out of reach. Trees as Standards or Espaliers should not be left to the influence of wind, otherwise much damage might be done. Raspberries not pruned should have attention without delay: they are not easily injured with manure, and do well when kept cool and moist at the roots. Bushes may require protection from bullfinches: white threads and feathers often keep them off for a time; a tame hawk, magpie, or owl, kept near them will drive them away. All old soil may be removed from the collars of the bushes and replaced with fresh soil. As digging goes on, a good coating of manure placed over the roots, and covered thinly with soil, does much to help the fruit, and is good for preventing caterpillars keeping their quarters near the bushes: their larvæ are ready to start into active life. The remainder of tree-planting should have timely attention this year, as growth appears to be everywhere early.

Lawns will now be clean, but if alterations are made by turfing, the earlier it is finished the better. When turfing is done during March, much labour is often expended on carrying water. Shrubs growing bare at bottom may be cut down, and all dead wood taken out. This answers well with Laurels of sorts and Hollies, if not too stunted. Good mulching suits almost every shrub and Conifer, but it is no use

applying manure when the roots are far beyond its reach. Evergreen trees and shrubs do well when planted before growth commences. Deciduous trees often die when they are planted after the sap has begun to flow : much assistance with mulching and watering can be given, but continuous drenchings at the roots often do more harm than good. Means should be adopted to prevent shaking by wind. Let walks be fresh gravelled where it is wanted. Turning will do good service where it can be practised ; it saves much labour in summer. Dig up all beds and borders ; if trenching can be done, so much the better for the summer occupants.

Plant Roses ; give good turf with the roots, and mulch to keep out drought and to feed the roots gradually. A few Roses may be pruned to give an early supply, but the main stock should be left till next month at least. More than one-half of the Roses in the country are ruined by being left too thick at pruning time. All small useless growths should be cut out, leaving the hearts open and free from dead wood. It is not necessary to cut every shoot back to two eyes. Strong-growing kinds should not be cut back much. Some of the China and other free-growing kinds only require thinning out. Where Roses are trained on walls or other buildings, they should have old stunted rods cut out, and replaced by young healthy growths. Keep them clear of moss and old hard spurs. All suckers should be cut clean off below the graft ; if the plants are on their own roots, some of the suckers may be retained if wanted to fill up.

Sweet Peas may be sown in rows in the open ground, but better under glass in turves, pots, or boxes to be planted out. I observe that sowings of common Peas with us have been saved from the ravages of mice by being well dusted with lime before being covered up. The vermin have scraped till they found them, and appear to have left in disgust. Pinks, Carnations, Auriculas, Stocks, Mignonette, and other plants wintering in cold frames or pits, must be kept free from damp. Keep the surfaces clean and healthy : give light and air freely ; but cold frosty winds should be avoided. Stocks and Mignonette should never have the lights on when weather will allow them to be kept off. The fine Mignonette grown for Covent Garden is grown more hardy than what is grown elsewhere. Tilting the lights up back and front is practised when weather is showery. Hardy annuals may be sown in boxes or pots for early flowering. Dahlias may be placed in heat to sprout for young plants : where manure or other fermenting material is employed, care must be exercised, as much injury might be done quickly by over-heating. Sow Lobelia, Violas, Hollyhocks, a few Stocks (if required very early), Centaurias, *Cineraria maritima*, and other things for summer and autumn display. Let potting and

boxing of bedding-plants be carried forward without delay. Keep close at first ; then give fresh air when they are growing freely. Place *Calceolarias* into turf pits, or similar structures, to remain till lifted to the flower-garden. Cuttings of every useful plant may now be taken off and placed in heat to propagate. Very sandy soil is necessary to get them rooted quickly. Prick off seedlings before they become matted. Avoid sowing too thickly. Get up good quantities of hardy bedding-plants where glass is scarce. *Dactylis*, *Arabis*, *Cerasteum*, *Violas*, *Pansies*, *Stachys*, *Osborn's Dark Beet*, *Variegated Periwinkles*, *Aucubas*, *Lemon Thyme*, *Variegated Trees*, *Succulents* of hardy kinds in great variety, *Golden Stone-crop*, *Lonicera variegata*, *Ajuga reptans*, *Polemoniums*, &c., are all useful plants, and excellent for edgings or rows in ribbon-work. In greenhouses and plant-pits, young stock will soon be showing active growth ; let all have a shift that require it, and prevent any plants from becoming pot-bound. Large specimens, such as *Camellias*, *Epacris*, *Cytisus*, *Coronillas*, and all the *Heaths* which flower at this season, should have clean, healthy surfaces, and plenty of water and air. Shift on *Cinerarias* for late flowering. Stake out *Pelargoniums* ; put in heat *Achimenes*, *Gloxinias*, and *Fuchsias*, for summer flowering. M. T.

TREE CARNATIONS.

THOSE cultivators who have to grow large quantities of choice flowers either for the market or home decoration, should at once see about getting up a good stock of these valuable plants. They may be had in flower all the year round, and their delicately-perfumed blooms are much sought after, especially about this time of the year, for both " button-holes " and bouquets. They are admirable for mixing along with *Orchids*, *Bouvardias*, forced *Rose-buds*, and *Lilacs*, for all kinds of decorative purposes, and their successful culture is exceedingly simple. Some cultivators take cuttings and strike them in bottom-heat, say about 65°, about the latter end of February or March. An abundant supply of cuttings may readily be obtained by placing some of the old leggy plants in heat during the spring. The cuttings may be taken off and rooted in a close frame, care being taken to give a little air occasionally, to dry up superfluous moisture. Later in the season the plants may be set out of doors in a sunny sheltered position ; and they should not be allowed to suffer for want of water. During the summer months, cuttings will root freely round the sides of the pots without any protection, but they must not be allowed to flag from lack of moisture. After the cuttings are well rooted, they should be potted

in small sixty pots in a compost of fresh turfy loam, leaf-mould, and coarse sand. It is well to drain the pots thoroughly, as I find tree Carnations soon turn yellow and sickly, becoming infested with insects, and subject to an attack of mildew if the compost gets sour and stagnant at their roots. When the latter pest appears, dust the foliage with powdered sulphur. Green-fly may be kept under by syringing occasionally with Fowler's Insecticide or tobacco-water. I have seen fine healthy blooming plants obtained by striking the cuttings early in the spring, and planting them out on a sheltered border in April: here they may be allowed to remain all the summer, keeping the soil stirred occasionally, and giving water when they require it in very dry weather. The growth should be secured to stakes to prevent damage from high winds.

These plants should be carefully lifted and potted in the above-named compost early in the autumn or before the nightly frosts appear, placing them in a little bottom-heat, and keeping the house or pit rather close until they become established, when they may be removed to a sunny position in the greenhouse to produce their flowers. The following list contains a dozen of the very best kinds in cultivation:—

La Belle, pure white perpetual.	Valiant, rosy scarlet.
Mont Blanc "	Jean Bart, bright scarlet.
White Rival "	Diana, bright rose.
Boule de Feu, scarlet.	Beauty, white striped scarlet.
Prince of Orange, yellow edged with bright crimson.	Congress, fine scarlet.
Oscar, yellow, fine flower.	Ascot Giant, white with rosy margin. F. W. B.

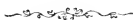


FIG-CULTURE.

NO. V.

Ripening the Fruit.—Until the first crop begins to show signs of ripening, keep the atmosphere moist, and syringe at shutting-up time on all fine days. But as soon as they begin to ripen discontinue syringing; give more air and just sufficient water at the root to keep the foliage and second crop of fruit healthy and free from danger, otherwise the flavour of the first crop when early will be deficient, and a badly-ripened Fig is a very insipid production. But I would here warn the inexperienced against an extreme of drought either at the root or in the air; for this would place the second crop in jeopardy. Circumstances must be modified to as much as possible suit the welfare of both crops.

The ripening stage is easily detected: the fruit suddenly complete their second swelling; the skin cracks longitudinally, and frequently it drops down from the neck of the fruit, becoming soft at its junction

with the stalk. To gather a Fig in perfection, it should be allowed to hang till the juice begins to exude from its eye or apex. Of course if they have to be packed and sent to a distance, they should be gathered a day earlier.

Second Crop.—As soon as the first crop is all gathered, give every encouragement to the second. The natural heat of the season having increased, the temperature may range a few degrees higher; syringing be resumed and practised regularly on all fine days; and more water can be given at the root. The house may be shut up in the afternoon with a temperature of 80° to 85° according to the weather, with a corresponding degree of atmospheric moisture. The Fig is very fond of heat, especially when derived from the sun, and also of a moist atmosphere.

When the second crop begins to ripen, air liberally, and give just sufficient water to keep the system active and healthy, but no more. As soon as the fruit are all gathered, should there be any signs of red-spider, syringe the foliage vigorously with water in which a little sulphur is mixed. Look over the trees, and remove entirely any growths that seem at all to crowd them; and when the wood is ripened remove the plants to the open air, plunging them in a place where they can have full sun, and keep them well watered until the leaves drop.

The routine of forcing trees planted out in borders does not differ in any essential point from the foregoing directions. They of course require less frequent watering at the root than plants in pots. Still, after the trees have thoroughly filled the border with roots and have covered the roof of the house with fruit-bearing wood, they require copious supplies of water and liberal annual top-dressing with rotten manure. When bearing heavy crops, ordinary manure or guano-water should be liberally supplied to them. Except when the fruit are ripening, it is not easy to over-water a limited border filled with one mass of Fig-roots. In the first few years of their growth and forcing, it is, as has already been stated, undesirable to over-feed them. Old Fig-trees that are properly managed sometimes show more fruit than it is advisable to allow them to bear, and it is desirable to thin them; for as in the case of most other fruits, a lesser quantity of fine Figs is more satisfactory than a greater number of inferior ones.

To have the first crop of fruit ripe on planted-out Figs between the time that the first crop is over and the coming in of the second on trees in pots, the time to begin forcing the former must be regulated by the time at which those in pots have been started. If they are started at the new year, the Fig-house proper should be started in about eight or ten weeks after.

Insects and Diseases.—Red-spider and thrips are the chief insects that infest the foliage of the Fig. The former is sure to attack them if they are kept too dry at the root and the syringe is not freely used, but it rarely becomes formidable when the trees are sufficiently supplied with moisture. Thrips must be kept in check by occasional fumigations with tobacco-smoke, but never when the fruit are ripe, as they will taste of the tobacco. The Fig, as far as I know, is exempt from disease.

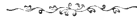
Packing Figs.—To pack ripe Figs to go safely to a distance requires great care. Tin boxes divided into compartments, as directed in the case of Peaches, are indispensable if the fruit are to be allowed to ripen and to be carried without mutilation. The compartments, of course, need not be so large as for Peaches. Into each put some fine paper-shavings, then a layer of cotton wadding, and over the wadding a square of tissue-paper sufficiently large to come up the sides of the compartments to the top; wrap each fruit in a tender dry Vine-leaf and lay it in its place, covering it over with another leaf to keep the paper from contact with the fruit. Then double the tissue-paper over all, fill up with cotton wool, lay a little paper-shavings all over the surface of the box, and screw the lid down. When Figs have to be packed, it is best to gather the fruit before the juice begins to ooze out of them, but not till they rend slightly at the sides.

Varieties of Figs.—In order to keep up a constant succession of ripe Figs for a good many months of the year, as treated of in former papers, not very many varieties are necessary. Taking into consideration the fruitfulness and good qualities of Figs in cultivation, I do not know of any so thoroughly satisfactory as the old and well-known Brown Turkey, White Marseilles (Raby Castle), Grosse Verte, Bourjassotte Grisie. These four are splendid varieties for both pot-culture and fruiting in borders. Some smaller varieties are extremely fruitful, such as Black Provence, Œil de Perdrix, White Ischia, and others; but they are small, and not so desirable as those first named. Mr Barron, Garden Superintendent at the Royal Horticultural Gardens, who has had great opportunities of forming an opinion, and who has excelled in the pot-culture of the Fig, in writing regarding keeping up a rich and varied supply from a house devoted to the cultivation of the Fig in pots, and where the collection is limited to say fifty plants, gives the following as his selection for keeping up a continuous supply of ripe fruit from June to Christmas. The varieties he puts into groups thus, showing how they will give a supply of fruit in each month. "July—White Marseilles, De la Madeleine, Gros Monstrueuse de Lipardi, Brown Turkey. August—White Marseilles, Lee's Perpetual (Brown Turkey), De Lipardi.

September—White Ischia, Grosse Violette de Bourdeaux, Black Provence, Grosse Verte, Bourjassotte Grisie, Col de Signora Blanca, De l'Archipel, and the second crop of White Marseilles and Lee's Perpetual. October—White Ischia, Black Provence, Grosse Verte, Bourjassotte Grisie, Col de Signora Blanca, and Col de Signora Nera. November—White Ischia, Grosse Verte, Lee's Perpetual, D'Agen. December—White Ischia, D'Agen, the latest of all."

Where, however, space is limited so that such a collection is impracticable, I recommend as the most constantly prolific and otherwise excellent, the varieties I first named. They are medium-sized and of excellent flavour.

D. T.



TEMPERATURES OF FORCING-HOUSES.

BEING one of the readers of your valuable magazine, I hasten to pick up the gauntlet as thrown down by your correspondent J. S., respecting low or extreme high temperatures in early forcing-houses.

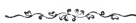
Amongst the various systems of heating forcing-houses, hot water may be considered the best for general purposes when properly arranged, although I am aware that some of our best practicals still believe in the old flues for setting Muscats; but as there is no rule without exception, circumstances generally alter cases, and it is well known that excellent fruit has been grown with either system; and as to the evils which afflict the inmates, these cannot always be laid to the system adopted, but more particularly to the practice or inattention of the cultivator, in supplying circumstances which favour the different pests which haunt our hothouses, instead of keeping a sweet and healthy atmosphere capable of bedewing the leaves with moisture as your correspondent J. S. ably observes. I quite agree with him in his "new proposition" of a lower scale of night temperatures. At the same time, I will be very much pleased to hear the opinions of your numerous and able correspondents on this very interesting topic, as J. S. has not said all yet on this subject, and means to return to it again—which I trust he will, as it is a long way off being threadbare, and, like the hothouses themselves, will stand any amount of ventilation. And as to the nut which your correspondent has given us to crack, I beg to inform him that I have cracked it long ago, when the present race of gardeners were beardless "laddies;" and as "facts are chieils that winna ding," I may state that I have had the honour to stand at the head of the poll several years in succession with Peaches and Nectarines at the Metropolitan Exhibitions, where I consider a certificate of merit is no mean prize, owing to the quantity of dishes exhibited. Well, the nut, I must admit, was cracked with a very low night

temperature. The house being large and the flue very small, prevented me from keeping a higher night temperature, and was the means, I suppose, of ornamenting the chimney-piece of my sitting-room with first-class medals. I simply mention the above facts in the hope that it may help to stay any little wavering that may be in the mind of your correspondent respecting cool night temperatures in severe weather. Upon entering the house the first thing in the morning, it was no uncommon thing to see hoar-frost with stars and stripes on the under side of the glass previous to starting our first fire to get up our day temperature; and if the weather was sunless, our day temperature seldom exceeded 55° ; but upon a change of bright weather, we generally husbanded and made the most of the sun-heat, with an adequate amount of moisture. The sorts of Peaches were Royal George, Gros Mignonne, and Late Admiral; Nectarines were Pitmaston Orange and Violet Hative. The heaviest Peach grown in the above house was Late Admiral, 12 oz., weighed in Worcester by Atkinson and Barr, fruiterers and seedsmen.

The above are facts for safe sailing and steady forcing. At the same place I had two smaller Peach-houses, which were ripe considerably in advance of the large house, and being kept at a higher temperature, the fruit never came to the same size.

Some of your correspondents of late years have been recommending what I considered high temperatures for Peach-forcing, and I have done it myself when fruit was required at a given time. With care and attention it can be done, but I always considered it sailing too close to the wind for general success, unless the cultivator is fully master of his position in all its bearings.

J. M.



EARLY AND LATE PEAS.

IN ordinary soils and situations, little difficulty in general is experienced in securing a plentiful supply of that esteemed vegetable the Pea after midsummer and during early autumn; but unless where conditions are favourable to their respective wants, early and late supplies cannot be calculated upon with such a degree of certainty. In this paper I do not presume to advance any new cultural theory on the above vegetable, but thinking that a few notes on some of the conditions necessary or at least desirable in cultivation of early and late crops, might not be amiss to some readers of your esteemed serial, I beg to offer them. In some cases the idea is entertained, that according to the shelter afforded them will Peas be early or late. But this idea, although both reasonable and natural, is not invariably correct, as a good deal depends on the nature of the soil in differ-

ent gardens or localities. Light and rather shallow soils, although not equally capable, with deeper and more holding soils, of maintaining the same duration and quality of produce, are best adapted for early crops; and of course a well-sheltered and sunny aspect will be additionally favourable.

An instance demonstrating the different effects of soils in maturing Peas came under my observation last summer which it may not be out of place to record here. In sowing what I expected the latest supplies from, early sorts were used—viz., Sangster No. 1, two sowings of which I put in on 10th and 25th of June respectively. Despite the fact that the latter sowing occupied the most shady quarter, the crop was ripe some fortnight before the other was fit for table. I have no other way of explaining it than that the soil in the quarter where the latter grew is very poor and shallow, and the crop depended mainly on an application of rotten manure, thrown into the drills (which were made with a spade) before sowing; while that on which the former was sown is good ground some 4 or 5 feet deep.

Referring briefly to late crops, I would observe that, as in early crops, locality and soil have much to do with the success or failure of the cultivator, the latter perhaps having the most direct influence in this respect. In dry seasons particularly, Peas for a late supply, sown on light shallow soils, are very liable to severe checks in their growth, in consequence of which they are prematurely thrown into bloom, when the object of the cultivator is at once defeated. Such results, it is true, are sometimes modified by regular attention to mulching, applications of liquid manure, &c.; but even such precautions, with light soils and in dry seasons, are often labour in vain. The Squire's Gardener, in his paper on the rotation of crops some time ago, made a very practical remark in concluding—viz., that the character of the soil in many gardens compelled the cultivator to localise many crops; and to this observation we would recommend those of your comparatively inexperienced readers to take heed, as in the case of Peas it is particularly applicable. It is at least a step in the right direction to reserve in spring (according to demand) a piece of good ground (rather heavy than otherwise), which has previously undergone deep tillage and been well manured, on which to sow late Peas. Those cultivators who may not have such resources at their disposal, in dry seasons at least, are not warranted, if I may so speak, to expect success in growing late Peas. I was at one time led to believe that ground intended for Peas should be manured sparingly, but have since perceived that such a rule could not be adopted indiscriminately. To rich heavy loam or clayey soils this rule may apply to some extent, but in regard to those of lighter and more open consistency, liberal manuring is necessary, and

for late crops in particular, as it enables them more effectually to cope with long periods of drought, to which they are occasionally subjected. Late crops should be rather thinly sown than otherwise, as I think by taking this precaution their bearing period is prolonged. Regarding the best varieties for late supplies, certain sorts will probably succeed better in some localities than in others. Here, in the Western Isles, with a uniformly humid atmosphere, Veitch's Perfection and Champion of England, two good old sorts, have these two last years yielded produce till the latter part of September. In fact, the former last season afforded supplies much longer than the sowings I previously referred to, which were originally intended for the latest supply.

D. MACKIE.

ISLAY.



ABOUT THE PELARGONIUM—ZONALS, TRICOLORS, &c.

AT the present day no flowering plant is so generally grown in Great Britain as is the subject of this paper; to give the expression its French meaning, everybody grows it. And it well deserves its popularity, being easy to propagate, easy to grow, will struggle on through much bad management to which it is often subjected, and always abundantly repays those who understand its wants and treat it accordingly. As the writer of the article on this subject in the 'Gardener' for 1870 has treated so ably on the getting up of specimens, we will confine our remarks on it for ordinary greenhouse purposes.

Cuttings can be struck with more or less certainty at any period of the year, though it is only in the case of new varieties that propagation in winter is to be recommended. Excepting where a house is specially constructed for this purpose, no structure is better adapted for it than a Pine-pit, and lacking that a plant-stove. Useful articles for propagating are shallow wooden trays, such as are recommended at page 422 of last volume. These ought to be filled to within half an inch of the top with a compost of sifted leaf-mould and silver sand, the latter preponderating. As a means of reducing the chances of damping off, keep the base of the cutting as near the top of the compost as practicable: if the trays can be placed on the hot-water pipes, roots will be formed all the sooner. A mode of propagating I tried last spring and found most successful, is worthy of extended adoption. It consists simply in cutting leaves which have a prominent bud in their axils out of the stem; it matters little or nothing how small a piece of the stem is attached so long as the bud is there. They in many cases formed roots quicker than cuttings, and many of them made better plants; but the main recommendation of this system is

the greater number of plants that can be obtained by it than by propagating from ordinary cuttings. I found it best to insert them in a sloping direction, and all sloping one way, as when inserted uprightly they are apt through watering to get tumbled about. Cuttings struck in the spring make nice little plants for autumn and early winter; but summer is the season when they can be struck with least trouble, making serviceable plants the following year. Well-ripened shoots should be chosen in preference to "sappy" ones, and especially in spring no leaves should be taken off. They may either be inserted in the open ground in pans, round the edges of pots, or singly in small pots. For summer propagation the latter mode is not so suitable as the others, the easiest being the first mentioned. Whichever mode may be followed, they should be potted off, except in the case of those singly in pots, as soon as the roots have grown an inch in length, using 3-inch pots for the smallest ones, and putting them mainly in 4-inch pots. They make nice blooming plants in this sized pot; and except it be for extraordinary purposes, 7-inch pots will generally be found large enough. The compost I prefer consists of loam, leaf-mould, and sand, the loam of a sound fibrous texture, broken roughly in pieces, using it as four to one of leaf-mould, which should be put through a $\frac{1}{4}$ -inch sieve, if pieces of wood, &c., are found mixed with it.

The Pelargonium enjoys a good quantity of sand, and a sixth part of the compost should consist of it. If the loam should contain much organic matter likely to decompose quickly, less leaf-mould should be added. No manure is recommended, because of the gross growth it engenders; and it is always an easy matter to supply it through the medium of the watering-pot when really necessary. As many crocks for drainage take up room which can be filled with better plant-sustaining material, and there exists no real necessity to use many in the size of pots recommended, more than one crock for 4-inch, and a few more for 7-inch pots need not be used, a little of the roughest of the compost being laid on the crocks. If the plants are properly attended to, the roots soon make sufficient drainage for themselves. Those not intended for winter blooming should have no more water than necessary to keep the roots in a healthy condition. According to atmospheric conditions, they may require watering from once a-fortnight up to once a-month. When they are watered, give sufficient to moisten the soil in every particle. During this period they may be dismembered of any straggling points; but if cuttings are wanted, this must be deferred till spring. Some time in spring they ought to be shaken entirely free of soil, and repotted in 4-inch, shifting when necessary into 7-inch pots. Treated thus, they obtain a fresh supply of soil every year, keeping them in a state of vigorous health, and reducing the chances of a soured

soil to a minimum. It is hardly worth while growing them longer than three years, as younger plants do as well; a place out of doors may be found for them generally. The *Pelargonium* appreciates to the full an airy structure. In such, there need be no trouble from disease; but place them in a structure limited in air volume or deficient in ventilation, and they will not thrive. It is simply nonsense to starve them into blooming. When growing, keep them moist at root, and get the pots filled with roots, then there will be no trouble to get them to flower profusely. I like them to get rather dry after repotting them, using the compost in a medium condition of moisture; afterwards I keep them moist at root. Plants lifted from the flower-garden in autumn, and potted in the smallest pots the roots can be got into, and in the spring shaken out and repotted with the others, make useful plants. There is not probably a better way of getting nice plants of the tricolors and bicolors than by this means; these do well treated the same as zonals. When by any means a plant does become unhealthy, and it is not desirable to consign it to the rubbish-heap, shake the soil from the roots, wash them in soft water, sprinkling sand over them; then pot in the smallest pot practicable, place in a warm medium airy house, and success will be pretty certain. The doubles are stronger growers than the zonals, make more roots, and consequently require more water, but bloom well in the same-sized pots.

There are a few sorts rather difficult to propagate—such are Golden Chain, Avalanche, Lee's Victory, Rollison's Unique, Lady Plymouth, the Pheasant's Foot, more especially the finest cut sort, and probably some others. These ought to be placed in a warm house, in which there is not much water thrown about, and a free circulation of air kept up. With ordinary attention, they strike well in such a place.

If any one should look this over whose space for growing plants is measured by the dimensions of his window-sills, and who has found a difficulty in getting his geraniums to behave "all the year round" as he would like, let him try them in limited pot-room: if well supplied with water, they will bloom better than if grown in large pots, and winter better also. If wintered in a heated room, they will require water oftener than those in an unheated apartment. They may, after having been dried off, have all the leaves picked off and be stowed away in a cool dry place till spring. I tried some thus last winter, only they were placed in a room devoted to dish-washing and kindred purposes, the water in which used to be frozen in sharp frosty mornings: only one plant succumbed. Fuchsias did not do so well, but a lemon-scented Verbena kept safely.

R. P. B.

GOSSIPY GLEANINGS FROM THE GREENHOUSE.

I SHOULD recommend every one who has a conservatory to keep gay all the year round to patronise *Iris reticulata*. A dozen of pots are not too much to keep up a supply of it in bloom in winter. It is beautiful as any Orchid. It is a blue of indescribable richness, while each petal has a band of yellow down its centre. *I. reticulata* is most manageable in the forcing-house when not subject to strong fire-heat; a temperature of 60° by day and 5° less at night is sufficient. The most simple mode to cultivate them for this end is to lift the bulbs from the open ground in September and November, and to place them in 5-inch pots. The greatest proportion of the soil should be light rich fibry loam, with a little sand and old cow-manure. After potting, stand them in a cool house for a month, when they will have appeared above the soil, and their roots will have extended through the whole of the soil. Water only to sustain the soil moderately moist up to this stage, but give a greater supply after they are put into force. Now do not try to outdo so-and-so—your neighbours, I mean—by an extravagant amount of fire-heat, else you will most assuredly only come off at the latest and worst. So far at least as quality goes, rather conduct the forcing with quiet moderation, and success will be the result. Keep the atmosphere charged, but not overcharged, with moisture, with a gentle air floating imperceptibly amongst your plants. Transparent glass, of course, is most essential, both to produce stubby plants and rich well-coloured blooms. This applies to forcing flowers in general.

What a gem is that delightful species of *Linum tryginum*, and how pleasant it is to have its glorious rich golden cups in the middle of “gloomy winter,” just after all the yellow of the *Chrysanthemums* has died out! But I may inform those of my readers who are unacquainted with it, that its flowers are of the brightest orange, with a skin silky and solid. They are produced in clusters on the apex of the shoots, and are somewhat campanulate in form; each corolla has five petals, and measures 1½ inch in diameter. The leaves are ovate-lanceolate, simple, their greatest dimension being 2 inches, of the most pleasing pale glaucous green. It succeeds admirably with the same treatment as *I. reticulata*.

Eupatorium odoratum is a most useful old greenhouse plant, although some of the most fastidious have given it the cold shoulder. Its great umbels of sweet, white, *Ageratum*-like flowers, are a consideration in late autumn, when other flowers are most scarce. Then, again, its wants are so humble and simple—only a sunny aspect in the greenhouse, a shift of pots once a-year, and liberal supplies of water when the flower-crowns are in formation. It flowers most profusely when

rather pot-bound, and is benefited by a little forcing. Not many of the Hyacinth tribe succeed well when put early into strong heat. I will not speak about that useful sweet little Roman white: three weeks gentle forcing gave us open flowers by the 26th October, certainly as fine in quality as are usually met with a month later. If I remember aright, the following half-dozen sorts exceeded all others that we tried to force early: *La Precoce* comes first with a plump but rather pretty spike of single white; next in course appears *Prince Albert*, a telling single blue; in close succession *Homerus*, a single red; tightly pressed by *Anna Maria*, double pinkish white;—*Grand Vainqueur*, single white; *Regulus*, lavender, shaded blue; and *Carmoisie Royale*, double red, come at the same time. Hyacinths in hanging-baskets afford a most pleasing feature in a conservatory, and not less pleasing are many of the early Tulips and Crocus; the two latter are quite adapted to pierce the sides of the largest baskets and stud their mossy sides with their varied colours. I have planted hundreds in baskets this autumn as described. The Snowdrops are also acceptable companions to the other bulbs, but they rebel against all forcing beyond the mere protection of a glass cover.

While speaking about hanging-baskets, I may venture to describe, for the information of those of less experience, what we consider a good practice to carry out in their management, and at the same time enumerate a list of plants suitable to that purpose. Supposing, then, we take into hand baskets above the usual size, our method of filling them would be as follows, considering that all the necessary means are at hand: Green moss being one of the principal items employed, it should be of the finest and most substantial quality—that is to say, the more green and felty, the better to retain the soil properly, and make rich verdant sides. First place a large patch of moss over the bottom to form a foundation, then a portion of soil; next turn out some pots of various coloured Crocus, and divide the balls into two or more plants; then place alternately clumps of the several sorts around the sides of the basket, making only the crowns protrude beyond the wires, while the roots rest on the soil inside the basket. Besides the Crocus, a few Snowdrops may be introduced; they will come first into flower. Independent of bulbs, we have the basket to furnish with plants which give immediate effect; the better to accomplish this, the more diversified the selection should be. Dwarf hardy Ferns should be largely employed, along with Lycopodiums and Alpines. Of Ferns, *Davallias*, *Aspleniums*, *Polypodiums*, amongst natives; and there is a rich variety to be had among hardy exotics. Of Lycopodiums, *Denticulata* and *D. variegata* are the two best. Among Alpines, one can scarcely go wrong if they are dwarf, spreading, and evergreen. All

the Sedums are applicable, particularly *S. carnea variegata*—it affords a most graceful drapery always fresh. Of Mesembryanthemums, *M. lucaanthemum* and *M. roseum* are superior. Variegated Thymes look well; dwarf variegated grasses also. Of *Mimulus*, the musk variety is the best. *Oxalis tropaeoloides*, with its purple-brown leaves and yellow flowers, is striking. *Aubrietia grandiflora variegata*, *A. deltoidea grandiflora*, *A. purpurea variegata*, *Bambusa Japonica variegata*, to furnish the top, *Centaurea argentea*, are splendid in winter. *Linnaea borealis*, a truly lovely little plant, allied to the Honeysuckle, with slender trailing stems and fragrant pink-eyed bell-flowers. *Lobelias* of sorts, *Myosotis rupicola*, *M. Palustris*, *Phlox Nelsonii*, *Saxifraga cymbalaria*, *S. hirculus*, *S. pectinata*, *S. Japonica variegata*, &c. Besides *Sedum carnea variegata*, we must not forget *S. atropurpureum*. *S. Japonicum variegatum*, *S. Sieboldii*, and *Sempervivum Californicum*, form nice rosettes; so does *Echeveria secunda glauca*. But I must stop and commence the building again. Just put in a circle of the nicest variegation to satisfy the eye in the mean time, and the bulbs will appear by-and-by to add to the beauty. All the plants having been put in, proceed to build the sides up with moss a bit before putting in more bulbs. Then follow the same process of bulbs and other plants, succeeded with tiers of moss until the top is reached, when Hyacinths and large Ferns and other flowering plants form part of the whole; and complete the work by covering the upper surface of the soil with moss. Finally, regarding watering and training, always supply enough water to wet the entire soil, and this more frequently than to a pot. Train by pegging in with hooks of wire any straggling growth, and distribute the shoots with an eye to lightsome grace. By the by, we must not omit to mention variegated Ivies, and that splendid species of Virginian creeper, *Ampelopsis Veitchii*. Nothing can surpass the last suspended in festoons over the basket; its pretty russet foliage is charming.

Leaving the things of mid-air, let us descend again and give our attention to those on *terra firma*. In the number of the 'Gardener' for November, our Editor has characterised *Acer negundo variegata* as one of the most effective plants for the flower-garden. This can well be conceived if it looks only half as well outside as it does indoors, treated as a greenhouse plant; for, to say the least, it is simply magnificent, more especially when the plants have reached 6 or 8 feet in height, at which size they are suitable for grouping with large Camellias, when their presence most effectually lights up the gloom natural to a Camellia-house in summer, or amongst Rhododendrons in spring. Such plants are invaluable, particularly when associated with red or crimson sorts. *Acer negundo variegata* is a variegated form of Maple, and therefore deciduous. Under glass it retains its leaves six months—that is to say,

treated as a greenhouse plant. The leaves are pinnate, forming lovely pendant plumes of cream-white and green, the white of the leaves and branches predominating frequently much beyond the green. The best mode of cultivating it is to pot from the open ground in autumn, transferring them to a cool house until early spring, when they may be placed in gentle heat where the air is rather humid. Water copiously after signs of growth are apparent; little water is required in winter while yet the plants are dormant. What useful plants are Rockets, too, when grown in greenhouses! Of the double Purple and double French-white, I have something favourable to announce. The duration and size of their grand spikes and flowers are what surprised me most, emitting and filling the air with the odour of the Stock over three months without a semblance of seediness in leaf or flower. These, like the intermediate Stock, ought never to be absent in spring and summer. All they require in a cultural sense is a roomy pot and loam rich with old cow-manure. Clumps lifted from the borders in autumn and placed in a greenhouse, good drainage, along with rather rich feeding by manure-water from the period vigorous growth commences until the first blossoms open, sum up their wants.

There are many other plants of equal interest which must stand over for the present.

A. KERR.



SUCCESSION PINES WITHOUT BOTTOM-HEAT.

It is the most usual plan in the cultivation of the Pine-apple through all its stages of growth to have it subjected more or less to bottom-heat. The practice is so general that it would lead many to infer that they cannot be grown in any satisfactory manner without it. This summer I tried a house of successions as soon as potted, placed upon the surface of the bed, the same as a lot of ordinary plants—say Geraniums, for instance—the largest ones at the back, and altogether just as thick as they should have been placed at the time. When the plants were thus set, some observers had their doubts about their success, but I felt confident that they would do well enough; and I am glad to say that they have done well, and to my entire satisfaction. By the time that the plants became too thick, more room was afforded them, and I can say that I never saw a lot of plants grow better. In this state, the plants require water oftener, but they can be better fed, and the plants are much surer to be kept in right condition at the root with a little extra attention. If any one has thought on the above plan, and not seen it carried out in practice, they can rely on the above being a faithful description.

ROBERT MACKELLAR.

ELVASTON CASTLE.

LAWN FROM SEED.

Now that croquet has become such a fashionable amusement, all who can must have their croquet lawn; and as turf is not always obtainable, by attending to the following directions a very good lawn may be had, instead of the beds of weeds and tufts of grass too often seen.

The essential point, by this mode, is to have the ground thoroughly clean, level, and firm, and in the choice of grasses suited to the soil and situation. Dig it over as early as convenient, as the longer it lies before being sown it has the less chance of subsiding afterwards. Roll it several times, when dry, during the winter and early spring, and fill up the hollows until the surface is level. About the beginning of March, or sooner if dry, rake it fine, and let it lie until the weeds germinate, when it should be carefully hoed. By doing this, we would hear fewer complaints against seedsmen for sending weeds instead of grass.

The following quantities are sufficient for an acre, but by using more seed, a close turf is formed sooner. The first or second week of April is a very good time to sow:—

NAMES OF GRASSES.

	Light soil. lb.	Medium soil. lb.	Heavy soil. lb.	Shady places. lb.
<i>Agrostis vulgaris</i> (fine Bent grass), . . .	6	4	0	10
<i>Trisetum flavescens</i> (yellowish Oat-grass), . . .	3	2	0	0
<i>Cynosurus cristatus</i> (crested Dog's-tail), . . .	10	13	16	10
<i>Festuca duriuscula</i> (hard Fescue), . . .	6	8	10	0
<i>Festuca ovina tenuifolia</i> (fine-leaved Fescue), . . .	4	4	2	0
<i>Poa nemoralis</i> (Wood-Meadow-grass), . . .	3	3	5	8
<i>P. nemoralis sempervirens</i> (Evergreen do.), . . .	3	5	6	8
<i>P. trivialis</i> (rough-stalked Meadow-grass), . . .	3	3	4	0
<i>P. trivialis parviflora</i> ,	0	0	0	8
<i>Trifolium repens</i> (white Clover),	6	6	7	6
<i>T. filiforme</i> (slender yellow Clover),	2	2	1	0
	46	50	51	50

The above mixture may be modified to suit circumstances. For very dry places, use more of the *Agrostis* and both *Fescues*, and less of the others in proportion; and also by observing those which do best naturally in the district. In most of the Lawn-mixtures that I have seen, nearly one-half is Rye-grass. About the most that can be said in its favour is that it grows fast, a quality that is not wanted on a lawn, however desirable on the farm. Besides, it is not a permanent grass, as may be seen by examining any old pasture, when it will be found that the Rye-grass has disappeared and its place is occupied by others of a more permanent character. But whether its disappearance is caused by natural selection, or the short-lived nature of the plant, I cannot say; but that such is the case, is a fact of which any one can easily satisfy himself.

To insure a good turf, keep it always short, especially the first year.

KELSO.

A. B.



BRITISH FERNS.

DURING the last quarter of a century, Ferns have become very general favourites in the decorations of rockeries, in many odd corners, under trees, and by waterfalls, where they can have a regular moist atmosphere, distilling its sweet

and refreshing influences around them. In such situations how freely they grow, and develop their graceful forms, arresting the attention of every person who has an eye to beautiful form! Even in the smoky town, how often do we see some of them, in small glass cases, placed in the windows, as we pass along the streets, and how very interesting they are to the tender and often delicate hands that attend them! Some Ferns thrive very well in such situations. Many of our British Ferns are too large for growing in small cases in a parlour window. Still we have seen a few very good selections for such a position, and, when anything like well managed, they give a pleasing interest to a parlour window. I will here name a few of those I have selected for such purposes, and when they are taken while young, they will suit very well for a few years; and they are by far better suited for planting into glass cases while they are young than when they are old, because all their roots are close to the heart of the plants, and are, moreover, free of any decaying nature in their centre, and are more easily covered with soil, and they accommodate themselves far better to their natural condition and habitation. One error we have often noticed in the management of such cases has been the tendency to keep them shut up too closely. By all means keep the dusty air of rooms entirely from them; still there is a difference between doing so and that of shutting them entirely off from all external air. Tropical Ferns, of course, require to be more closely nursed than British ones. However, whether British or tropical, it is always well to shade them from the hot sun during the middle of the day in summer. This can be done by throwing a thin shading over the glass. It will depend much upon the size of the case what selection of Ferns is most suitable to put into it; and it is very advisable that there be ample means of drainage, so that all unnecessary moisture can pass freely off. Stagnant tainted water is at all times to be avoided even with such moisture-loving plants as Ferns. For this purpose, we have used for the bottom of cases a perforated sheet of iron, or a board having plenty of holes bored through it; and then, underneath this perforated bottom, have a case or pan of tin or zinc. In the larger cases this can be made to be movable at pleasure. In the case of globular glasses of 12 or 18 inches diameter, the receiver of all over-moisture may be made like a common saucer to sit under the glass, and when it is necessary to remove the moisture which has passed from the glass case, it is best to lift the whole out from the pan. In the selection of Ferns for cases, it may be well to bear in mind the habitats of the various Ferns, in other respects most suitable for this purpose. For instance, those found growing in shady or partially-shaded situations may prove more suitable than those found growing on the top of old stone-and-lime walls, or on very dry banks, fully exposed to all the dry influences of sun and air; and yet some of those found growing in such situations, by their very distinct forms, are very interesting, and give variety. Although we mention these peculiarities as belonging to different species, no doubt every one may suit their own individual tastes in their selections. However large or small any case may be, there should be in it a plant or two of *Adiantum capillus veneris* (Maidenhair Fern, commonly called), *Athyrium Filix fœmina* (or Lady Fern)—the younger these are the better—and some of the different forms of *Lastrea Filix mas*, *Lastrea dilatata*, *Lastrea thelypteris*, and *Lastrea oreopteris*, or *Lastrea montana*; or some of the common *Polypodium vulgare*, and the *Scolopendrium vulgare*, are very interesting in cases. *Adiantum nigrum* is a pretty variety; but as it likes a dry situation, it may not answer so well; and yet I have seen one large plant of this variety of British Fern look well under cultivation. In this case, as in many instances, much depends on the position, and the skill of the cultivator.

It is very interesting to see what use some persons will make of very common things, and Ferns are capable of being turned to many useful and interesting purposes. Some few years ago, on my visiting a gentleman's dairy, this train of thought was forcibly presented to my mind on seeing a very noble plant of the common *Scolopendrium* occupying a very prominent position in that dairy. The dairy-room, where the milk was all displayed in pure white pans upon shelves of blue slate, is 16 by 20 feet, having a floor of red paving-tiles, all kept scrupulously clean. In the middle of this dairy was a small round table and pedestal of pure white marble, upon which was placed an ornamented pot, and growing in it was one of the largest and best plants we have ever seen of the common *Scolopendrium* vulgare, and well it looked in the midst of such a clean and well-ordered dairy. There were well on for five dozen fronds in this plant; the greater part of them were over 18 inches long, and as they fell gracefully over towards the white marble, concealing the pot, they presented an effect which was at once novel and very pleasing.

G. DAWSON.



FRUIT-CULTURE IN THE NORTH.

It is the opinion of many who live beyond the Grampians, that nothing but the most hardy of the vegetable kingdom will grow or prosper in this northern clime. But to those who thus think, I will endeavour, with your kind permission, to show otherwise. As a young gardener, of but a very few years' experience, my practical knowledge cannot be much, neither are my literary attainments such as would warrant me to aspire to the dignity of becoming a contributor to your valuable magazine. Still I will try, as briefly as I can, to show how successfully some of the finest fruits are grown in this county (Caithness).

Of the Strawberry there are, *e.g.*, Garibaldi, Dr Hogg, Elton, British Queen, and the Keen Seedling, all of which are grown with the most successful results. The Elton especially requires a little more than a mere passing remark, as it grows to such an enormous size. Having been struck with the prodigious size of them here this year, I was led by curiosity to weigh some of them: if I were to chronicle the results here, I fear I would be accused of drawing the "long bow;" and yet I am perfectly satisfied that, without being considered boastful, they were equal in quality and size to any that have been reared in the sunny South. Examples might be enumerated, but this will suffice for my present purpose.

Of other fruits there is the Gooseberry, which, of course, does well in almost all places; but I might mention that while I hear many complaining of a species of fungus destroying their crops, it is generally unknown here, and where it has appeared it has been of such a mild type that it never affects the fruit.

As a parenthetical remark, I might here say that the Apple crop this year was more or less affected by a species of fungus. A number of black dots appeared on the skin of the Apple, which is supposed to have been caused by the bite of an insect when the fruit was setting. But to turn again to the Gooseberry, I was going to say that the Sulphur and Hedgehog, as dessert varieties, and the large and small jam Gooseberry, as preserving varieties, are amongst those that suit best in this county.

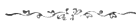
The Black Currant grows uncommonly well here on bushes, but bears better and a finer flavoured berry when grown against walls; and I yet hope to be able to tell you how Lee's Prolific Black Currant suits this semi-polar region.

Of wall-fruit nothing surprises tourists and our Southern friends more when they pay us a visit than the extraordinarily fine Apples which decorate the walls of many of the gardens in this county—Plums, Apricots, and Nectarines in some cases giving variation to the more common wall-fruit. If the first instalment of “Fruit-Culture in the North” meets your approval, I shall be glad to continue it in the succeeding number of the ‘Gardener.’

FORSS, CAITHNESSHIRE.

N. S. S.

Nov. 14, 1872.



THE FUCHSIA FOR BEDDING PURPOSES.

THE Fuchsia is seldom used for this purpose, and I cannot think why, as it is a handsome plant, and one easily grown. For bedding in masses, or along with Calceolarias or similar plants, spring-struck plants are best; but for the back of borders, the larger the plants are, of course the handsomer. One of the great advantages of the Fuchsia is, that it can be saved during the winter so easily; and this, of course, is a great advantage to those who have little or no glass. I have also used a now almost extinct kind, the old Fuchsia fulgens, and splendid it looks. It was a large old plant, and I made it form the centre of a circular bed. Every one who saw it admired it, and many asked what it was—Was it a Fuchsia?—never having seen it before; its long pendant orange-scarlet blooms and handsome foliage producing a wonderfully good effect. I am very fond of all kinds of Fuchsias, even the old Riccartonia, of which in Devonshire I have seen hedges made, and in Ireland have seen it growing to the height of 10 and 12 feet. During winter, Fuchsias may be saved in an old pit or shed with coal-ashes round their roots, and must be kept quite dry; or they can be plunged under the stage in the greenhouse. When the spring comes, pot them in a mixture of loam, sand, manure, and a little peat if you have it—if not, rotten turf. Give them plenty of water, and keep them growing on till it is time to turn them out in the beds.

A. H.

UPPER NORWOOD.

[Fuchsia fulgens is a grand old plant.—ED.]



A WORD FOR YOUNG GARDENERS.

IF I am mistaken in supposing that your reference to S. D. means Down South put “this and that” into the waste-paper basket, as I have no wish to urge my ideas against your better judgment. Otherwise, I will state I thought you knew me as one of your oldest subscribers. I make proper use of your publications and others by giving them to my gardener, after I have myself studied them, and he has now a goodly row of your volumes, highly valued. I am an old

amateur gardener of half a century's standing. From old associations and kindly feeling, I have free welcome to the numerous gardens in the land of flowers where I live, and converse often with master, mate, and man. Being interested in the subject, I have read much of what has been written respecting the low wages of both skilled and unskilled gardeners. I have many men in my employ, most of them hard-working but uneducated men. Most of them receive more weekly than an ordinary skilled gardener. While out in the autumn, I made inquiries, and found really clever gardeners working for 18s. per week; and my friends told me, as evidence of the rise in wages, that a skilled gardener was not now to be obtained for less than 21s. I have pondered on this matter again and again, while reading the various plans and suggestions. I am always met by the irrepressible and inexorable law of supply and demand; and I fear—notwithstanding all the clever writing on the subject, much of which, though it may grow in the book, won't grow in the garden—the endeavour to make twenty situations satisfy twenty-four applicants, will have no greater success than the trying to squeeze a quart into a pint pot. Some would say, "As you are so ready to find fault with others, what would your wisdom suggest?" I will answer the question by stating, that although a man, clever with hand and head, with the spade finds life a struggle in the old country, he is the salt of the earth in the new. And if those intelligent men who write on this subject in your and other papers would combine with others to obtain every kind of information which can be gathered as to the best way to arrive at the point where the "spade" is in demand, and keep the rising generation fully and constantly informed how to obtain assistance, where to go, where friends from same quarter have gone before, keeping up a correspondence with those who have formed a suitable location,—they will find, if this information is widely spread, the young men who now are constantly struggling to push their elders out of their situations will seek their fortunes in wider fields and with more success. DOWN SOUTH.

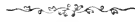


PRIZES FOR GROUPS OF GREENHOUSE AND STOVE PLANTS.

YOUR correspondent, A. Leslie Melville, writing on the above subject in last number, says he staged from forty to fifty plants on a space 6 feet by 6. Surely there must have been a mistake in figures somewhere, or the plants must have been very small indeed. But apart from that, the idea is a very good one, and one that I have advocated for years. An immense deal of trouble and time is saved; and, moreover, a greater variety of plants can be brought forward. Indeed, a number of very fine things can be shown in a group that otherwise would never be seen on a show-table. In 1870, the Dundee Horticultural Society offered prizes for two groups of stove and greenhouse plants, twenty-five and fifteen respectively. Exhibitors for the twenty-five were excluded from the fifteen. I was chief mover for the above prizes, but it met with determined opposition among the members of the Society, and all sorts of consequences were to follow; yet the show turned out to be the best ever seen in Dundee. I said at the time that, taking the show as a whole, it was the best I had ever seen. The groups were a grand feature. The lot shown by myself, which came in first, occupied a space nearly 18 feet by 8. The others were much about the same. In 1871, the number was reduced to fifteen and ten respectively, the space occupied being not very much less, as the plants brought forward

were larger. In 1872, the number was again reduced to nine and six, so that the idea of a group had all but disappeared. The plants shown by me were not grown for exhibition alone, but lifted out of the stove and greenhouse, where some of them occupied their place all the year round. The idea was for exhibitors to bring forward a nice tidy useful lot of plants, with perhaps a few large ones for a set-off. I laid my ideas before the Committee, "of which I was a member," with no more selfish motives than that I intended to exhibit, and fully expected the idea would meet with the approval and hearty support of the greater part of the members. But, as I have said, there was great opposition, and many hard things were said. I still hold to the idea, and maintain that it is the most satisfactory way of exhibiting plants, and show on our exhibition-tables who has the best-conducted greenhouse and stove; and there are several ways in which the thing can be done—viz., a given space, a given number of plants, and certain restrictions as to size of pots or pans; or any space, any number of plants, and any size of pots or pans. I heartily wish to see more of Mr A. L. M.'s suggestion in our show-rooms, but beg of him to allow a little more room or a smaller number of plants.

JOHN HEATH.



VEITCH'S AUTUMN GIANT CAULIFLOWER.

Too much cannot be said in favour of this fine Cauliflower, and it certainly is well worthy of its name Autumn Giant. I cut some heads last October which measured from 8 to 10 inches in diameter, beautifully formed, exceedingly white, and of uniform closeness. By making two sowings, one about the middle of April, the other a month later, it will give a supply from the beginning of September up to December.

H. MASON.

BISBROOK HALL, UPPINGHAM.



REPORT OF THE WEATHER. 1872.

MELDON GARDENS, MORPETH, NORTHUMBERLAND.

Month.	MEAN TEMPERATURES.		Rainfall— Inches.	No. of days on which rain fell.	Greatest fall in 24 hours.
	Minimum.	Maximum.			
January,	33.3	43.2	2.70	20	.35 on 24th
February,	35.5	46.8	3.23	23	1.25 on 24th
March,	33.1	52.9	4.23	20	.90 on 22d
April,	35.5	57.2	3.07	16	1.31 on 21st
May,	38.	63.5	2.21	21	.35 on 22d
June,	45.1	70.6	2.40	19	.26 on 10th
July,	50.9	75.1	4.	15	1.04 on 12th
August,	47.9	72.	3.92	15	.70 on 10th
September,	43.3	61.9	4.62	23	.63 on 25th
October,	36.8	52.8	5.65	21	1.63 on 10th
November,	34.3	45.6	4.79	23	1.12 on 15th
December,	32.7	41.1	6.01	22	1.13 on 8th
			46.88	233	

The maximum temperatures of the year were 90° on the 5th and 8° on the 21st July; the minimum 19° on March the 26th and December the 5th and 12th. From May the 1st to the end of the year there have not been more than four consecutive days without rain.

JOHN FINLAY.

RAINFALL.—HIGHEST and LOWEST TEMPERATURE, as registered at DRUMLANRIG GARDENS, 191 feet above level of sea, from 1855 to 1872 inclusive; and number of days on which rain fell in 1872.

- 1855.—Rainfall, no note. Lowest temperature, 13°, December. Highest temperature, 83°, July.
- 1856.—Rainfall, 43.9 inches. Lowest temperature, 4°, December. Highest temperature, 89°, August.
- 1857.—Rainfall, 39.9 inches. Lowest temperature, 11°, February. Highest temperature, 90°, June.
- 1858.—Rainfall, 48.0 inches. Lowest temperature, 11°, November. Highest temperature, 82°, August.
- 1859.—Rainfall, 48.9 inches. Lowest temperature, 3°, December. Highest temperature, 89°, June.
- 1860.—Rainfall, 47.1 inches. Lowest temperature, 0.2°, December. Highest temperature, 85°, July.
- 1861.—Rainfall, 59.4 inches. Lowest temperature, 2.7°, January. Highest temperature, 77°, May.
- 1862.—Rainfall, 57.4 inches. Lowest temperature, 9.0°, November. Highest temperature, 79°, September.
- 1863.—Rainfall, 46.6 inches. Lowest temperature, 9.9°, November. Highest temperature, 81°, June.
- 1864.—Rainfall, 40.9 inches. Lowest temperature, 10.9°, January. Highest temperature, 88°, May.
- 1865.—Rainfall, 38.8 inches. Lowest temperature, 1.1°, February. Highest temperature, 87°, June.
- 1866.—Rainfall, 52.2 inches. Lowest temperature, 11°, January. Highest temperature, 81°, July.
- 1867.—Rainfall, 58.5 inches. Lowest temperature, 11.3°, January. Highest temperature, 79°, August.
- 1868.—Rainfall, 56.0 inches. Lowest temperature, 11°, January. Highest temperature, 83°, August.
- 1869.—Rainfall, 43.0 inches. Lowest temperature, 7.3°, December. Highest temperature, 84°, August.
- 1870.—Rainfall, 37.0 inches. Lowest temperature, 3.3°, February. Highest temperature, 80°, August.
- 1871.—Rainfall, 40.8 inches. Lowest temperature, 7.3°, March. Highest temperature, 76°, August.
- 1872.—Rainfall, 71.6 inches. Lowest temperature, 16°, December. Highest temperature, 81°, July.
- Rain fell on 229 days in 1872.



RAINFALL AT NASEBY WOOLEYS, NORTHAMPTONSHIRE, SUPPOSED TO BE NEAR THE CENTRE OF ENGLAND, ONE MILE FROM THE MEMORABLE FIELD OF NASEBY; 567 FEET ABOVE SEA-LEVEL.

1872. — MONTHS.	Number of Days Rain or Snowfell in each month.	Largest amount in the last 24 hours, registered at 9 a.m.; and the dates.	Totals in each month.	1872. — MONTHS.	Number of Days Rain or Snowfell in each month.	Largest amount in the last 24 hours, registered at 9 a.m.; and the dates.	Totals in each month.
Jan.,	22	1.01 on the 24th	4.26	Aug.,	12	0.98 on the 7th	3.02
Feb.,	18	0.50 " 18th	1.68	Sept.,	15	0.41 " 1st	2.17
March,	14	0.31 " 17th	1.51	Oct.,	20	0.69 " 20th	4.08
April,	13	0.60 " 21st	2.60	Nov.,	22	0.59 " 26th	3.88
May,	13	0.51 " 15th	2.20	Dec.,	17	1.18 " 16th	4.45
June,	16	0.98 " 18th	4.28				
July,	15	1.02 " 29th	4.69	Totals,	197		38.82

H. HARRIS, NASEBY WOOLEYS, NORTHAMPTONSHIRE.

REVIEW.

THE GARDENER'S YEAR-BOOK AND ALMANAC FOR 1873. By ROBERT HOGG, LL.D., 171 Fleet Street, London.

This Annual is more instructive than ever. In addition to a full descriptive list of notable new fruits and flowers of 1872, there is the most complete illustrated report on Peas that ever appeared. Besides the usual useful tables and well-written Garden Calendar, there is much information useful to the gardener. An additional feature are several woodcuts illustrative of some of the chief mansions and gardens of England.

Calendar.

KITCHEN-GARDEN.

The continuous rains have still kept work on land almost at a standstill; and we have to repeat that every dry hour should be taken advantage of. Ground on which Broccoli and other winter crops have grown, will now be getting vacant, and it should be manured, trenched, or dug without delay. We have been obliged to dig up plots without manure, as wheeling has been impracticable. Applications of manure-water and mulching may have to do instead, should a dry spring and summer be experienced. Peas may now be sown in boxes under protection, or in the open ground; but mice will have to be looked after. Earlier sowings, whether they are to remain under glass or be planted out, should not be allowed to draw up weakly for want of air and light. Broad Beans will also require attention in a similar manner. When sowing Peas on wet land, it is well to keep them above the level of the surrounding soil, and cover them over in ridges; those coming through, may have old Mushroom-manure, leaf-mould, or dry soil put over them. If frost should set in, crops nearly finished may have the remains lifted and placed closely together, so that space may be turned up to the action of the weather. A bed of early Horn Carrots may be sown in a warm position, using light sandy soil on the surface; they will succeed those in frames. Plant more Potatoes where they can be protected. Sow Radishes between the rows, which will be used up before they are in the way of the Potatoes. Onions and Parsnips may be sown by the end of the month, should the land be in nice "mealy" condition. We still hold to the system of sowing

Onions—in fact, everything else—in drills; and have a great objection to sowing thickly, except on very poor soil. But no plant can do well when crowded in either rows or beds. Cauliflowers in frames may now be potted and kept growing under protection, till fit for planting out; those under handlights will require plenty of air, keeping the surface well stirred. Stir all surfaces among growing crops, such as Cabbage, Lettuce, &c., with prong, where it is practicable. Look over roots in store when time can be spared, taking all decaying ones away. Get plenty of Pea and other stakes ready. Horse-Radish, Seakale, and Rhubarb, may all be planted; they all will do well in deeply-worked soil, well manured. Pieces of the two former, about 6 inches long, may be placed in rows; plenty of room must be allowed for the luxuriant foliage. Where Rhubarb has been forced, it should not be turned out, as many of the crowns would probably rot, even though protected. To increase the stock, single crowns may be divided, and potted or placed in boxes of soil; and when there is no danger from frost, the plants can be planted out in good ground. Keep up supplies of Rhubarb by taking in a few roots weekly till it is growing in the open ground. Seakale, Asparagus, and Chicory, may also be taken in as required. Keep up supplies of Tarragon, Mint, Sorrel, &c., by taking a few roots in weekly. Keep them cool and airy when they are fit for use. Mushroom-beds should be made as required: smaller beds made frequently are generally more serviceable than when large beds are made at long intervals. French

Beans should now be getting plentiful. Sowings made frequently, keep up regular supplies. When heated pits can be spared for planting them out they do much better, and much labour and annoyance with red-spider is saved. When those in pots are fruiting, they may be well supplied with clear manure-water. If surfacing is given, let it

be rich and open material. Where forcing of vegetables is done under glass, much will be gained by shutting up early, harvesting sun-heat. A continuous close stagnant atmosphere is a great evil. Sow a pinch of Celery; but uneven temperatures, dryness, or drenchings of cold water, will cause "bolting" to seed. M. T.

FORCING DEPARTMENT.

Pines.—The earliest-potted suckers of last year should now be examined, and if they are becoming pot-bound take the earliest opportunity of shifting them. If dry, they should be watered five or six days before they are shifted, so that they may be suitably moist for shifting. The necessary quantity of soil should also be put in a warm place, to have the chill taken off it before it is required. A calcareous turfy loam that has been stored a few months is the best, mixing an 8-inch-potful of bone-meal, and about half that quantity of soot, to every large barrowful of it. If the soil is damp, it should be spread out thinly in some dry airy place, to get dry before potting with it. Such open soil should be put very firmly into the pots. In turning the plants out of their pots, shake out entirely any that may have been standing in a drip and have the soil soured and sloppy. Those too that are much pot-bound should have their roots carefully disentangled, for if potted with a severely-matted ball, they have a tendency to start prematurely into fruit. When all are potted, plunge them in a light pit near the glass. Keep the night temperature at 60° in cold, and 65° in mild weather, with a bottom-heat of 85°. Avoid crowding them thickly together if possible. Two feet by two is sufficiently close. Look over later suckers also, and water such as may be getting very dry. By the end of the month raise the temperature for them to 65°, and give air on all favourable occasions, to prevent them from drawing. Early-fruiting Queens that have been subject to an increase of temperature for the last month or six weeks, should in most cases be showing fruit by the end of this month. Immediately it is noticed that they have started into fruit, give them a watering with guano-water sufficient to well moisten the whole ball. Some plants may show a disposi-

tion to grow instead of starting into fruit, and these must be kept rather dry than otherwise, or the chances are that they will continue to grow. When it is clearly manifest that they are going to miss fruiting, there is no better way of dealing with them than to cut them over at the surface of the soil and repot them. This seldom fails to cause them to fruit. After they are started, and it is desirable to push them on to succeed as closely as possible the latest fruit, the night temperature may range to 75°, especially if coverings can be applied to the glass at night. Shut up early, so as to make the most of sun-heat. Do not much increase atmospheric moisture till the fruit are bloomed off. At the same time, do not allow the atmosphere to be parchingly dry. Range the bottom-heat from 85° to 90°. Any plants that have started in October and November, and that have been properly attended to, may now be pushed on to ripen at a time when Pines are scarce and much appreciated. Succession fruiting plants intended to be started in March and April should still be kept quiet and rather dry at the root. Suckers potted in the dead of winter may now be subject to more heat and moisture, giving air on every fine day in the forenoon.

Vines.—Where one or two vineries have been started, another may be started about the middle or end of the month, according to circumstances. See former directions as to temperature, &c., connected with starting them. The temperature may now, however, range 5° higher than in the case of those started in December. Prune and otherwise prepare the late Vines for starting immediately the fruit is all cut from them. Where Grapes are still hanging, continue to look over them at least twice a-week, and remove every sign of decay or mouldiness. Continue to air these on

fine dry days, and keep the house shut when it is wet and foggy. Use fire-heat to keep the temperature at 45° in severe weather, and on fine days after rain put a little extra heat in the pipes to expel damp. The remaining Grapes, where only a few are now left, may be cut and have their stalks put in bottles of water, by which means they keep well enough, but they deteriorate and become watery in flavour. All superfluous bunches should be thinned from advancing early crops, immediately it can be seen which are the best to leave. Compact-shouldered bunches with short footstalks should always be preferred to those that are long and loose. Thin the berries of Hamburgs and other free-setting sorts very soon after they are set; and their thinning should be completed at once, for it is very undesirable to be thinning them after the berries are getting near the stoning point. Do not exceed 65° at night all through this month. But take every chance of shutting up the house early when there is sun, allowing the temperature to run to 80° for a time. When the weather is dull, avoid much evaporation of moisture from steaming-trays, but keep the air genially moist by floor-sprinklings. Give more or less air every day, regulating the amount according to the state of the weather. Attend carefully to the disbudding, stopping, and tying down all Vines that are in stages of growth requiring such operations. See last month's Calendar regarding these points. Where there has been a bed of fermenting leaves, or manure and leaves, placed on outside borders, let it be turned over and some fresh material be added, so that the heat may be quickened. If it can be protected from rains, it will continue to heat more steadily and for a longer time. Where very early Grapes are being pushed forward from pot-Vines, the forcing may now be at an augmented pace, especially with sun-heat by day, when the thermometer may stand at 85° for a while in the afternoon, starting the fire just in time to prevent it from falling below 70° at 10 P.M. In cold weather it may drop to 65° by morning. Hard forcing to force up to a maximum night temperature is bad in all respects. Give air always early in the day. Pinch off all fresh lateral growths. See that no check is allowed from neglect of steady supplies of moisture at the root, giving manure-water in a weak state every time of

watering. Vine-eyes may now be put into heat, giving them a bottom-heat of 75° to 80° , and a top-heat of about 60° , till they are well started, when it may be raised to 65° .

Peaches.—Where the fruit have set thickly in early houses, let them be partially thinned, removing all those that are in clusters, except the largest and best-placed fruit. Disbud the young growths by degrees, removing all fore-right and back buds at the first operation, and completing it at other two intervals of eight or ten days. Should the weather be cold, continue to force, cautiously avoiding high night temperatures: 55° during cold weather, with a few degrees more when mild, is high enough for the present. Give more or less air every day, always putting it on early by degrees and shutting up early with sun-heat. Syringe the trees every fine afternoon at shutting-up time. Where trees are opening their blossoms, keep the air moderately moist, and avoid subjecting the bloom to cold currents of air, and also hard forcing, which, in conjunction with too much moisture, causes the wood-growth to too much precede the blooming and setting process. See that trees having their roots exclusively in inside borders are kept steadily moist. Prune, tie, and dress succession-houses, top-dressing the buds, &c., as formerly directed, and thoroughly cleansing the glass and woodwork.

Figs.—Steadily keep up the bottom-heat to trees being forced in pots as directed last month. The temperature of the air may range to 55° in cold weather, with a few degrees more when mild. Air freely on fine days, shutting up early with sun-heat. Keep them steadily moist at the root; and if the trees have not been shifted this season, and have their pots very full of roots, waterings of guano or ordinary manure-water may now be commenced. The succession-house of trees growing in borders may now be started, beginning with from 50° to 55° at night.

Strawberries in Pots.—Strawberries in bloom are very easily injured by a high temperature from fire-heat and by cold currents of air, and both conditions must be avoided. Keep the temperature about 55° at night till they are set, when it may be raised to 60° . Those that are set and swelling off may have the temperature increased from 60° to 65° , according to the weather. These will now take more water, and

every second watering may be with manure-water, until they begin to colour. Introduce succession-batches of plants into heat. Peach-houses or vineries now being started suit the starting of Strawberries also where no regular Strawberry-pits exist. Keep the plants near the light. Look out for green-fly on all that have been heated for a time, and fumigate with tobacco when it first appears. Do not fumigate when the plants are in bloom.

Melons.—Those sown last month will be ready to plant out this month. If in dung-frames or pits, plant two in the centre of each light on a ridge of soil. As the roots advance to the sides of the ridge, add soil by degrees. Grow with as little water at the root as possible, and beware of scorching in changeable weather. The night temperature, with coverings on the glass, should be about 70°. Presuming that the plants have been stopped before being planted, they will now

have three young shoot each. Train these regularly over the bed, and stop them when they reach to within a foot of the sides of the frame. The lateral growths will show fruit. Sow twice this month for succession-crops, as directed last month.

Cucumbers.—See last month's directions regarding those now in bearing. Those sown in January will be ready to plant this month. Let the soil be composed of two parts fresh loam and one part leaf-mould or very rotten dung. If to be grown on trellis in Cucumber-houses, plant them 2 feet apart, and train the leader without being stopped till it grows 4 feet, but stop the lateral growths at every joint. Range the night temperature at 70°. Give a little air every day, and shut up early with sun-heat. Keep them steadily moist at the root with water at 85°. Sow about the middle of the month for later crops.



Notices to Correspondents.

The Editor has to express his regret that several valuable papers are unavoidably postponed till next month.

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in the 'Gardener' to David Thomson, Drumlanrig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to, be forwarded by the middle of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

ERRATUM.—In paper on Clematis, page 32 of January number, 9 lines from top, for "300" read "1300."

AMATEUR.—No. 1. *Hypericum montanum*. 2. *Hypericum pulchrum*. 3. *Polygala vulgaris*. 4. We do not recognise. It is most difficult to make anything of such dried-up morsels. Plant your Lilliums at once in half loam, half well-decayed manure, with a fifth part of sand.

A SUBSCRIBER.—In your climate we would recommend a good brick wall as being a better absorber of heat than a light-coloured one. A cemented wall wired is not so warm for the trees as an ordinary brick wall without wires. In other respects it would give many advantages

T. M. P.—The variegation in *Pinus Douglassii* is quite common in many places. It is very pretty, and from our experience of it we think it will retain the creamy colour in the growing season.

NOTTS.—You will see that your suggestion is being carried out. We have made arrangements that embrace winter-flowering Orchids and other winter-flowering stove-plants.

PETER.—No. We do not hold out any promise in the direction you refer to. We are alone in giving 48 pages, all original matter, for 6d.

R. P.—Yes; *Maréchal Niel* is perfectly hardy in Dumfriesshire, and blooms well.

MR Y.—Yours is a matter for private arrangement, not for public discussion. We cannot afford space for such a trifle.

Can any of the numerous readers of the 'Gardener' give me the most effectual means of destroying Ants from the place here. Our houses, at work, are swarming with them. I tried the guano-water, and poisoning of Peaches with arsenic. They seem to have an instinct of their own, for I found the arsenic untouched. I have tried everything I can possibly think of without success. Our houses are all connected to one boiler, the pipes passing up flues. The Ants passing up these flues, make it a very difficult matter to get them collected together.—W. C.

A. L.—Your request is anticipated, as a series of papers on the Peach will begin in March.

H. C. G.—Next month.

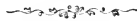
R. V., Shorley Bridge.—Pansies can be safely planted up to April, but if too late in planting, they are apt to go off when hot weather sets in. The following twenty-four show varieties will answer your purpose well, viz.:—*Selfs*.—Luna, Mrs Horsburgh, Alex. Macnab, Count Bismarck, Eclat, George Keith, T. L. Fleming, Snowdrop. *Yellow Grounds*.—Ebor, William Young, George Ford, Thomas H. Douglas, John Currie, Comus, George Wilson, George Muirhead. *White Grounds*.—Miss Adamson, Tom White, Jessie Laird, Lavinia, Princess of Wales, Clara, Jane Wilson, Edina.

J. BIRRELL, Lancaster.—The following are really twelve first-rate. All or any of them will do well for competition purposes. Arabella Improved, Nabob, Rossini, Inimitable, Hogart, Noblesse, Warrior, Beauty of Kent, Crown Prince of Prussia, Maid of Honour, Ringleader, Lizzy Haxam.



THE
GARDENER.

MARCH 1873.



LOW NIGHT TEMPERATURE IN HOTHOUSES.



FROM the letters which we have received asking for advice as to lower night temperatures in forcing-houses since J. S. directed attention to the subject in our December issue, we are led to believe that there is at present a very considerable amount of interest on the part of the owners of hot-houses in this important matter. Apart altogether from the soundness of the practice viewed from a purely horticultural stand-point, no doubt the present exceptionally high price of coal, with but slight hopes of a fall to any considerable extent, is, from its effects on the pockets of many, prompting to inquiry as to the soundness of the practice of keeping up the night temperatures which have been generally aimed at in our plant and fruit houses. Within certain limits, there can scarcely be a question as to the wisdom of standing by the theory of low night temperatures so ably advocated by some of the physiologists of the last generation, and notably the late Dr Lindley, whose mantle seems to be lost to the horticultural press.

We have only to go to the school of nature to learn most unmistakably, from the nocturnal fall of temperature, how erroneous is the practice of hard firing to maintain high night temperature, even in the case of those plants which in their native habitats are subject to the most intense sun and the highest degree of tropical heat, and where the variation between the sweltering heat of day and the chilliness of night is most forcibly experienced. Some may perhaps be inclined to tell us that nature is not now marching according to primeval law and order in this as well as in other respects. This, however, would be "drawing the subject a little too fine" in reference to the case in

point. True, the most successful horticultural practice does not invariably homologate the teachings of nature, but it does corroborate what we are taught in these nocturnal variations ; and surely it is not necessary, at this era of horticulture, to point out how erroneous is the artificial application in excess of the stimulating power of heat throughout the long hours of darkness of a British winter night. The experienced cultivator, at any rate, knows well that such a combination of circumstances is productive only of debility, and the utter want of that stamina in plants which is only attainable under a corresponding amount of light and sunshine, with which we are never favoured in this country during our season of early forcing.

If plants are kept continuously at a high pitch of excitability by the stimulating agency of heat, irrespective of the variations of day and night—of light and darkness—their whole system becomes impaired ; and nature has provided against such a result, not only by the less sudden variation of summer and winter, rainy seasons and dry ones, when a long season of activity is followed by a long repose, but by the more sudden variation from a high temperature by day with light, to comparative coolness by night with darkness. Were it possible to reverse this order of things for a single month, when plants are in full tide of growth—could we have light and a low temperature, darkness and excessive heat—we should learn a lesson from the appearance of the vegetable world that would impress us with the beneficence and wisdom of Nature's order of things, and would teach us a great and lasting lesson in early forcing if in nought else.

It is no part of our present intention to enter into the nature and results of the distinct functional operations of plant-life by day and night. Our object, and all that is possible for us, is, to throw out a few hints which we hope may stimulate our young and inexperienced readers to study vegetable physiology—the structure and functions of plants ; and we are not aware that we can direct them to a better authority than Dr Lindley, in his 'Theory of Horticulture.' Suffice it here to say, that in the absence of sunshine at night, there is a cessation in plants of that evaporating and decomposing process by which plant food is perfected and rendered fit for augmenting in a proper manner the growth of plants and trees ; and that all excess of heat at night, in the absence of these processes, which are dependent on light, only tends to gorge the system with an overdose of crude sap, producing a mere attenuation of imperfect and unfruitful growth, which by day does not bear the strain of sunshine in a manner so as to result in the production of wood and foliage, flowers and fruits, of which plants are capable when subject to that nocturnal repose which is as necessary to plants as it is to animal life. Hence all experienced

forcers of early flowers and fruits avoid high night temperatures when the days are short and dull, and endeavour, on the contrary, to do the—what may be termed—hard forcing by day with light. Experience has taught that the growth that is squeezed out in mid-winter with a high temperature is soft and flabby to a degree that will not bear with impunity that sunshine which is absolutely necessary to restore it to a proper state of tissue.

The too common practice of fixing rigidly any given temperature in hothouses, irrespective of the state of the external atmosphere, we regard as bad practice, and, so far as we are concerned ourselves, we invariably fix the range of temperature over at least 5° or 7° , according to the coldness or mildness of the weather. This not only saves fuel, but it is better for the plants than highly-heated surfaces. Moreover, we have cause to regard the fluctuation of the thermometer, even in steady weather, with much more complacency than we did at one time. And we are at a loss to know from whence such rigid lessons as to heat have been learned. We have several correspondents in the tropics who have remarked to us that if cultivators of tropical Orchids at home saw how amazingly they luxuriate with the night temperature frequently below 40° , they would not be so careful about high night temperatures. There is, however, another side to this question. We know that the Peach sometimes gets killed with a British frost, while it stands that of the United States with impunity, owing to the more thorough maturity that the wood attains under an American sun. The same may no doubt be applicable to even many Orchids. This, however, teaches us that it is not from wide differences of temperatures in the twenty-four hours that plants suffer, but that it is much more from unnatural growth in the absence of light.

There can be no doubt that this is a question well worthy of discussion while we are face to face with the price of coal nearly tripled within the last two years, and that the hours of darkness are those in which most money can be saved or wasted in connection with our practice in maintaining night temperatures. It is therefore from this, as well as from other points of view, that we would invite further discussion on the subject. The tendency of the present generation of gardeners has been to recede from the night temperatures advocated by those who have gone before them; and our conviction is, that there are yet some steps, not only within the limits of safety, but to be attended with improved culture in many things. The subject has many sides in practice, and a change in this calls for change more or less in other conditions as well. Our space forbids reference to these at present, but we may recur to the subject ere long.

THE AUTOBIOGRAPHY OF A GARDENER;
OR, LESSONS FOR THE YOUNG PROFESSIONAL.

APPRENTICE-LIFE.

I AM quite sensible of the risk I am running in attempting to depict what may be termed a one-sided view of former gardening-life—apprenticeship. But let me here say that I do not for a moment doubt that equally graphic pictures from real life could be sketched of an opposite state of things even at the same period to which I allude. Let me also add, that the lessons I have adduced, and shall hope further to multiply, may be ridiculed as tame, their logical sequence by no means clear, and the propriety of their insertion here even doubtful. Still, let me remark that I have found the practical application of the principles by no means useless in my dealings with those whom at different periods I have had under my charge.

Again, I may be accused of being prosy. No excuse for myself will I here plead, for a life spent amidst the beauties of nature should be a poetically-inspiring one. But, alas! drones will be drones. I must not, however, further for the present digress.

I shall, for convenience' sake, arrange the present chapter, sermon-like, under the following heads (whether I shall strictly adhere to my divisional arrangement I will not venture positively to assert, knowing too well how volatile my mental efforts are). But now for the orthodox way of crudely expressing my thoughts. Firstly, my autobiography; secondly, my practical progress; thirdly, my supplementary modes of mental improvement. To be quite consistent, I think I should add, fourthly, lessons to be learnt; and, fifthly and finally, application. This arrangement must be certainly unexceptionable. Would that the rendering of the details could be as hopefully regarded! My motto seems to be *Festina lente*.

But now to plunge at length *in media res*. I have a vivid recollection of my first "job." I was to make some thousands of cuttings of the common Laurel. My master provided me with a brand-new knife (I know not whether it was a Saynor's or not, for at the moment I do not remember whether that now celebrated firm was then in existence). One thing I am conscious of, that, unfledged chicken as I was, just emerged as it were from my mother's lap, I thought it was a hardship to be required to make these future trees in the open air, exposed to wintry winds and rain, when I might just as well have had them under cover. But I did not rebel—I did not complain—I did not murmur: how vain would it have been! Subsequently, how much greater cause for doing so!

My fingers seem now benumbed, and the cold east wind penetrates,

in imagination, my snug little sanctum as I recall to memory the cruel blasts that would so boisterously blow, even in a southern county, in an exposed position, in blustering March—as I think upon the cold icy dew that would so persistently present itself upon the green leaves and scanty flowers in this early part of my career. My hard fate, thought I!

Ere the dawn of morn had fairly presented itself, my solitary individual self might have regularly been seen in the flower-garden, in front of the mansion, picking the Chestnut and Beech leaves from the last remains of autumn and early spring flowering-plants—from the charming sprigs of evergreens which had been inserted to represent a garden of living beauties. Picture to yourself the desolation, though, after a blustering wind! Realise my stupidity if you can! I used to think how puerile to strip the Laurustinus of its beautiful waxy flowers, the Portugal Laurel of its sombre foliage, and the Yew of its churchyard proclivities, to gratify the fastidious taste of the “family” and visitors.

Those dreaded mornings, when Anemones, Ranunculuses, and other successional bulbs had to be freed from the droppings of surrounding trees, will ever live in my remembrance. Listen to my then specious reasoning! Why were deciduous trees ever created? Why, since they are, do not their leaves fall in May, when they might be gathered up pleasantly? Oh, my poor fingers! Would, Mr Editor, that you could raise the shades of Leech to portray them; or rather my full-length portrait, as at such a moment I can imagine it appeared upon paper. But here note the perverseness of human nature. If this, my special occupation before the “family” was down, had at that time been taken from me and deputed to another, I should have desired that the bitterest furies of *Æolus* would blast all his efforts. I began to regard this flower-garden (I will give you a sketch of it hereafter, Mr Editor, if you will accept it) as my own peculiar domain. And now I am about to moralise, so there will be an opportunity for you to skip a few lines. Do the apprentices of the present day enter upon their duties so thoroughly as to regard themselves essentials of the establishment? Do they love work for its own sake, flowers for their beauty, their attention to them the instrument for acquiring knowledge? Do they regard difficulties as the sources of pleasure, from the enjoyment derivable from surmounting them; inconveniences as necessary hardships, inseparably connected with their selected profession, and only to be smiled at after endurance? Rather do not too many young men regard the work set before them as the creation of professional tyranny, performing it carelessly, that they may be relieved of it.

Fond indulgence! my idol was destined for another’s worship. I

was summarily dismissed, and sent to a more laborious occupation. Why was this? Jealousy, jealousy which has dogged my footsteps through life, brought this about. True, I was at this precious spot at early dawn, when the autumnal shower drenched me. I was there when the icy dew subsequently chilled me, when the hoar-frost whitened me, when the eastern wind penetrated me, when the wintry snow covered me; but I was also there when the gentle zephyr of spring stimulated me, when the rich emerald leaves delighted me, when the bursting buds joyed me. I was there to nurse the newly-planted summer-beds, and to watch their development; but, alas! when my favourite Carnation began to throw up its spikes, and I was, with a gardener's natural instinct, training it, my joys were blighted. How? Lady S. commended my neatness in tying and training, and requested me to attend exclusively to all such work in her pet garden as needed attention. I am aware of the imprudence of the request. A kind word to my master might have secured her aim, and saved me a mountain of trouble. The words were thoughtlessly spoken, however, for she was naturally too kind to give wilful uneasiness or pain to the humblest creature, much less to one who had contrived to insinuate himself into her good graces. The words were spoken to a boy whose conceit was already sufficiently advanced to need no further stimulus—to one who had been treated harshly, and who, consequently, rejoiced that he had found one at least who could appreciate his efforts—to one, moreover, who had not sufficient tact to represent a command under the more attractive phase of a request—to one, alas! who knew that he was already regarded with jealousy, and foolhardy enough to care not how much he increased it. Folly of youth! Independence may degenerate into insolence, indifference to scorn. Seedling errors and mistakes may produce a plentiful crop of ill-flavoured fruit!

I was forbidden the garden, and had to incur the odium of declining to obey orders without an opportunity of exculpating myself. I had neglected to obey her ladyship's commands, and was henceforth placed without the pale of her favour.

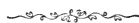
Green-eyed monster, jealousy! how many a breast hast thou robbed of ease and pleasure! how many a wreck hast thou not made of body and soul! But I must proceed.

I will not attempt to depict daily occurrences, for they would fill a volume. I will only mention two or three that at the moment strike me, with the view of *improving* the circumstances.

Hardly-worked and hardly-treated apprentices, listen! During the three years I was there, I was told the names of two plants by my master, and these names I have now forgotten; and this special favour

would not, I suppose, have been shown me, if I had not detected him in an act of vice which would have cost him his situation if I had mentioned it. "Conscience doth make cowards of us all." And, conscience-stricken, he became suddenly familiar with me, until he blindly supposed from my silence with regard to it that my eyes and other senses had been at the critical moment oblivious. Thus we madly parley with sin till it gets the dominion over us. Thus we fondly deceive ourselves that human eye is unconscious of our defects. Young men, before you grumble at your difficulties, and envelop yourselves in deceit, reflect that others have their trials as well as you, and that cunning may be detected by the penetration of the simplest!

ONE WHO HAS WHISTLED AT THE SPADE.



POLYANTHUS.

I SEND you the method by which I grow my Polyanthuses in beds. I take the soil out of the bed 18 inches deep, and I put a thick layer of old horse-dung at the bottom. Then I mix the soil from the bed with old turf, leaf-mould, and good sharp sand, well mixed together in equal proportions, and I put it on the horse-dung on the bed where the plants are to flower. I put the horse-dung at the bottom of the bed, because I find the plants always strike down to it, and they flower much stronger. The situation that I always find the best is a shady border under a hedge, where they are screened from the hot sun. The Polyanthus is often killed with red-spider: to avoid which, as soon as possible, I lift them from the frame with a good ball of earth, and take care not to break the young roots off them. I plant them 10 inches apart. When in flower, I shade them from the hot sun, and the flowers consequently keep fresh much longer. Crossing for seed should be done from 12 to 2 o'clock. Impregnation is more effectual when done at this time. The plants that I save seed from are those that bloom in pots in a frame, and from which bees are kept. The best-marked flowers, with the best tubes—such as Lord Lincoln, Beauty, George IV., Kingfisher, C. Allsebrook, and President—are good to breed from, as they seed freely. I am sure if any of my Polyanthus friends will try those sorts, they will find them excellent. I have myself 2000 plants of seedlings to flower this spring, and something like forty kinds to plant out to try again that were very promising last spring. Some of them I expect to be fine. To raise a good stock I make up a hotbed in my large frame and put 6 inches of leaf-mould in it. Twelve days after, when the heat has subsided, I take my plants up and divide them. The latter end of July is the best time for this

operation. Take care that there are no old roots left to them, as they are often cankered, and do the plants no good. It does not matter if there be no roots to them at all, as they soon make new roots when put in heat. I give them a good soaking with water, and keep them close for about twelve or fourteen days; then I give a little air for a few days, afterwards I take the lights off altogether till the latter end of September, and then put the lights on for the winter. I generally sow my seed the first week of March in well-drained pans. Fill the pan with leaf-mould and turf, and a little sand on the top. In this I sow my seed, just covering it over, and give it a good watering, and put it in the frame till it comes up. As soon as the young plants form rough leaves, I put them out of doors till the latter end of June, then I plant them in beds, where they remain till they flower. Inferior sorts I pull up as they flower. If any of my Polyanthus friends will send to me in April, I shall be glad to send them a box of flowers of named kinds, and some of my seedlings to look at.

WILLIAM ALLSEBROOK.

[We have had so many inquiries about this beautiful old flower that we express a hope that the remarks of Mr Allsebrook may serve as an answer to these inquiries.—Ed.]



NOTES ON HARD-WOODED GREENHOUSE PLANTS.

ACACIA.

It would be easy to make an extended list of beautiful and useful species of Acacia for general decorative purposes without exhausting the list of those which are or have been in cultivation. It is a large family, and varied and interesting enough, botanically considered; but for the simple purposes of the garden or the decoration of the greenhouse, a very small selection will suffice. The fact that there is little variation of colour in the family settles this point. So large a group of plants, with the same colour repeated in nearly every member of it in slightly varying shades, as it is in this, can hardly be singled out from the whole range of the vegetable kingdom. Therefore, except in the case of large collections, of which there are few or none worthy the name in private gardens, a limited number of the greenhouse species will suffice for the purposes of introducing greater variety into the furnishing of the greenhouse in winter and spring, which is all that in these papers will be advocated. And here let me explain, that I aim only at rousing some general interest in the value of hard-wooded or shrubby greenhouse flowering-plants, wherever the circumstances of the garden admit of their being introduced more largely than they

are at present. I do not think that they are adapted to the circumstances and necessities of all places. Small places, where the stock of plants of all classes commonly cultivated and requiring greenhouse protection is lodged in one or two houses, cannot devote any part of their glass space to the special culture of these plants without sacrificing much of the enjoyment which it affords as at present, stocked in the main or wholly with soft-wooded plants. The treatment required by shrubby and herbaceous plants is so opposite, that they cannot well be grown together in the same house the year round. They may be flowered together, but that is all they will submit to in the shape of general treatment. The culture in each case must be somewhat different up to this point, in order to grow them well and have a full development of flower; but for the time they are in bloom, they may stand together in the same house without detriment to each other, provided there are pits or houses to which they may be removed afterwards, and be separated and put under the treatment they severally require. Acacias are better adapted to being grown in collections composed of hard and soft wooded plants than many other hard-wooded subjects. They are generally plants that are easy to cultivate, and require the common treatment of greenhouse shrubs, without any of the niceties that have to be observed in the case of some others. Good fibrous loam, with a liberal allowance of sharp sand, suits them admirably. Fibrous peat, if very good, may be used to lighten heavy close loams where the lighter fibrous sorts cannot easily be got; but indifferent peat is a bad component in any compost, and should be used sparingly for all pot-plants, except those which are known to require it specially. Drainage is a point which should be attended to carefully. Young plants are usually raised from seed or cuttings of the roots. The latter make very good plants, but on the whole and in most cases the best are got from seed, and with the least trouble. Plants that are a few years old usually ripen plenty of seed, so that there is no difficulty in keeping up fresh vigorous stock to any reasonable extent if care is taken to save a sufficient quantity of seed when it is anticipated it may be required. Cuttings of the shoots rarely succeed, except where the means and the skill in propagating exceed the average about private places. The plants are easily enough grown to considerable dimensions in a year or two—some sorts, of course, growing more rapidly than others; but this end should never be sought after by means of large shifts. It is better to give two small shifts in the year than one large one,—a point to be borne in mind by all novices in the culture of greenhouse shrubs; for though things may appear to go on swimmingly for a time, a foundation of difficulty is often laid in the circumstance that the ball of earth is only half filled with roots, and therefore liable

to sour and injure such roots as may find their way into it. Some care should be exercised after potting for some time, in order to prevent the earth from becoming too wet or too dry. After flowering is over, the plants should be cut more or less back, according to the habit of the individual sorts, with the view of preventing leggy or bare specimens, and balancing the growth; and seed-pods should be picked off early after they are set, unless they are wanted for the purpose of increase. The plants may remain in the greenhouse for a time, to make growth after being pruned; and when growth is well started, that is the best time to pot established plants requiring only a little annual attention in this respect. In the milder and drier districts they may be placed out of doors in summer with advantage, to ripen their wood; but in cold wet ones they are better accommodated under glass, so as to be protected from drenching rains. The glass need only, however, be used when necessary, as in bright dry weather they will be benefited by a very free exposure to sun and air.

Among the most useful species for general cultivation, *A. armata* is one of the best of those having comparatively compact growth, and it is one of the best known, being frequently to be seen in even limited collections.

A. platyptera is one of the least generally grown, and yet among the most deserving, were it only on account of its flowering in late autumn or winter, one of the duller periods of the year. It is naturally loose and straggling in growth; is not, in fact, capable of being formed into a bush without being tied to some supports, but well adapted for covering pillars or the back wall of a greenhouse, in either of which cases it makes a very beautiful object, and furnishes large supplies of cut flowers. The peculiarly-winged stems of this species, profusely adorned with the orange-coloured globose flower-heads, are beautiful and interesting; and the stems being very elastic, are well fitted for many purposes of table decoration when cut.

A. Riceana.—I slightly alluded to the surpassing excellence of this fine species in my last paper, and would here again remark on its peculiar beauty and fitness for clothing pillars or rafters in the greenhouse. Those who may have seen it well done in this way will not rest satisfied till they have tried their hand on it in their own case, if the facilities are within reach; and nothing certainly is more easy to cultivate than this fine plant when it is planted out in a border, where it may ramble free at the roots and have corresponding liberty above. Like all other Acacias, it is the better for a little annual trimming with the knife; but as wherever it is grown it is sure to be cut more or less for table and room decoration, all that will in most cases be necessary in spring is a little regulating of the principal branches, so

as to keep up a proper balance and free production of the long annual shoots which are found so useful when cut for dressing rooms and vases.

A. Drummondii makes a very handsome specimen when well grown. There are several varieties, some of which are not worth growing. They vary, as most plants do, somewhat from seed; and it is the more desirable in such a case to raise the stock from cuttings either of the root or branch; and the latter, it should be known, are not so difficult to manage as in some other species. Unlike the previously-mentioned species, the flowers of this are oblong; and it is chiefly in their relative length that the varieties differ, though there is also more straggling and loose growth, accompanied with the inferiority of the flowers alluded to, which renders it impossible to form the plants into handsome dense-blooming specimens.

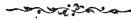
A. rotundifolia.—A very handsome species, of very dwarf and compact growth, flowering profusely, with the flowers globose and orange-yellow. This, with *A. armata* and *A. hispidissima*, are among the best for small collections or small houses, neither of them being very rampant in growth, nor difficult to keep in health in circumscribed limits.

A. spectabilis is of rather large growth, with handsome glaucous pinnate foliage; and when it acquires a little age, it is one of the most profuse flowering of the family.

A. celastriifolia, like the last, is a strong grower, but with the leaves or phyllodia simple—not pinnate, as in it—and the flowers large.

A. dealbata, *grandis*, and *lophantha*, are species remarkable for the graceful character of their leaves, which are beautifully pinnate, and in the two former glaucous, but in the latter green. They are only adapted for large houses, as they quickly outgrow the space in small ones.

W. S.



HINTS FOR AMATEURS.—MARCH.

ALL arrears among fruit-trees should be brought forward—better to do it late than that it should be neglected. This applies to fruit-tree planting,—better to do it yet than that a season should be lost: finish all tying, cleaning, mulching, &c., as early as possible. Grafting may now have attention: this operation is simply fitting one shoot into another, allowing the barks to fit exactly, at least one side, but better if both are evenly fitted. Make cuttings of bush fruit as formerly advised. Protect blossoms of fruit-trees, using netting or spruce branches; air and light should not be excluded. Uncover Fig-trees by degrees, and when exposed entirely, let the shoots which can be spared be cut out,

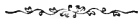
and those required fastened over vacant spaces neatly. There should be no crowding; clean rods trained out with short stiff wood are what give fruit with certainty. Mulch old bushes. We have cleared the soil from the surface of the roots of a number of old bushes here, and replaced it with a quantity of good rotten manure, which cannot fail to renew the vigour of the plants; lime may be dusted all over the bushes when wet with dew, but not while rain falls. Strawberry-beds should be hoed, and kept free from weeds; a quantity of rotten manure placed over the surface and slightly forked in among old plants will help them much.

Lawns will now require to be well swept and rolled preparatory for mowing; clean gravel-walks, turn and roll them if it can be done; repair turf edgings; sow grass-seeds where lawns are thin and patchy—but birds are ready to devour the seed. The pruning of shrubs may be done with all speed. Cut out all dead material: those getting naked at bottom are renewed most effectually by being cut well down; manure given freely at the roots encourages free growth. Shrubs and trees may now be planted without delay: those requiring stakes should have attention; mulching and watering should not be neglected if dry weather should set in. Auriculas, Polyanthus, and other plants of a similar nature under glass, should have their drainage examined, or be potted on, if necessary; fresh surfacing may do much to help them to bloom well. Carnation and Picotees, and Pinks, may be planted out soon if ground is in good order; those to flower in pots, should be shifted on. Any plants, however hardy when under glass, should be well inured to air before they are turned out.

Top-dress Pansies in pots, and plant out cuttings which are well rooted; sow Mignonette, Sweet-Peas, and hardy Annuals to flower early in summer. Pot off Chrysanthemums as they become rooted, and prevent them from being drawn up by heat; put in more cuttings, and divide old plants. Early Cinerarias and Primulas may be potted and grown on without coddling them: Cinerarias do badly with heat or a dry atmosphere: good turfy loam, a little leaf-mould, and sand, suits them well for first potting. Primulas require more vegetable mould; a little good peat in the soil helps them to root freely. Pot Dahlias as they become fit to handle, and roots are formed: put in top, with a "heel" to each if it can be practised; prevent all cuttings from being drawn up for want of light and air: put in all kinds of cuttings as they can be had; pot on plants which have been stored into boxes. Hollyhocks may be planted out when weather is fine; soil may be placed among Violets to allow the runners to root preparatory for planting out fresh beds. Roses should be planted out if not done already: prune the greater part of the stock from the middle to the end

of the month. Divide and replant herbaceous plants of all kinds ; sow Pyrethrums, Tagetes, Stocks, and Asters for an early lot ; sow for growing in heat, Cockscombs, Balsams, and globe Amaranthus ; cover small seeds very slightly, and the soil should not be wet and cold, but in nice mellow condition. When seedlings are pricked off into pots they should not be taken from heat to cold ; but when rooted in the fresh soil, they can be hardened by degrees. Liliums and Gladioluses may be potted for autumn decoration of glass structures. It is early enough to plant them out in the open ground about the end of the month. Look out for plants to keep structures gay throughout the season. Pot on Scarlet Pelargoniums, Lobelias, Verbenas, shrubby Calceolarias, and anything which will make a show. Cut back Fuchsias, and replot them when they have sprung a little ; grow them on in a little moist heat. Pot on young Stocks ; prevent them from being checked by draught or cold drying winds. Start Achimenes, Gloxinias, and Caladiums ; they require little water till they are in active growth, then they will take abundance if the pots are well drained. All plants requiring more pot-room should not be allowed to starve for the want of it. Pot young Pelargoniums from the cutting-pots ; stake out those which are to form specimens ; keep them free from green-fly by fumigating or syringing with Quassia-water made from the chips. Free-growing Heaths which have been cut back and growing, may be shifted into larger pots, or the balls slightly reduced, and repotted in pots of same size. A mild, moist heat, with air given freely, will suit them for a time, when they may be taken to cool quarters. Camellias, when done blooming, should be assisted to make their growth by placing them in moist heat ; their roots should be put right either by shifting to larger pots, or taking away a quantity of old soil, and giving fresh soil with plenty of drainage. Keep up a show of flowers by placing a number of forcing plants into heat at short intervals. Plants when done flowering should be well cared for ; shade plants in bloom from bright sun. Keep all free from decaying leaves.

M. T.



SEED - TIME.

WHILE this is being written, all the most important of seed orders for the garden will be in the hands of the seedsman, and busy hands are now employed late and early in wrapping up, labelling, packing, and sending off seeds to every corner of the country to be in readiness for the seed-time which is now upon us. The Gardener's seed-time is almost all the year round, but the great bulk of garden-seeds are sown from the second to the fourth month. While we write (the 13th

of February), the ground has not been in such trim for receiving seeds for five months: it is dry, loose on the surface, and firm to the tread. In speaking of seeds, the first thing uppermost on our mind is a repugnance to old and cheap seeds—have nothing to do with either. Some seeds are said to be better for being old—for instance, Melon and Cucumber seeds; but we are very doubtful of the saying; we don't at all think it is a fact. Some seeds will keep their vitality a long time, and will be little deteriorated for a year or two's rest: but deteriorated they will be to some extent, and, besides, it all depends on the keeping. The best seeds will be completely spoiled in a few months, or even weeks, by bad keeping—that is, being too damp or even too dry, and cold will injure the vitality of many seeds of exotic plants, such as Melons, Cucumbers, tender Annuals, either of flowers or vegetables: they are just as susceptible to cold as the bulbs of Caladiums, Begonias, Gladiolus, or Potatoes, or any exotic bulbs,—so that the quality of old seeds depends very much on how they have been kept. We have also a great suspicion of cheap seeds. The professional gardener is generally too wide-awake, and his responsibilities too pressing, to allow himself to be gulled by cheap and inferior seeds; but it is surprising how many people, indeed the great majority of seed-buyers, run after cheap seeds, just as they will after cheap tea or anything else; and cheap seeds are supplied in plenty. There seems always to be an inexhaustible stock of cheap seeds. Annually, we have numerous complaints as to the failure of seeds, and crops coming untrue to name. On the latter point we might ourselves have something to say. The best remedy we recommend is to deal with houses of known respectability, give the price, and stick to your seedsman. Nothing we know is so dear in the end as cheap seeds: at the same time the dearest are not always by any means the best. Those who have a hankering after novelties may have them by paying the novel price.

Before sowing seeds it is an excellent plan to soak all seeds in tepid water: one night's soaking will do for some; with others, such as Canna seeds, those of the Camellia, Palm-seeds, Ipomœa, Passiflora, and many of a leathery texture, will want several days' soaking: this insures the seeds germinating more evenly and coming up together, and it also exposes at once bad seeds; good seeds swell up quickly and keep their colour, bad seeds soon look worse when steeped. Like dried and shrivelled Anemone-bulbs, in one night after being planted they will swell like to burst their jackets if sound—if unsound they will not. The placing of seeds in bottom-heat at once after sowing is often a great mistake, though done with the object of facilitating matters, although many seeds respond at once to a lively bottom-heat and come up vigorous and well; others will not, but are not unusually spoiled by

it : many seeds require time to germinate, and will not be forced. Such seeds as Tacsonia, Lapageria, Cliathus, Primulas of sorts, Camellia, will be found to germinate more satisfactorily in a moist, mild atmospheric temperature, than plunged in bottom heat ; or they will even do better sown in the open air under a hand-light in summer.

In spring all seeds should be covered lightly ; the soil is yet cold, and if deeply covered they may rot or be killed before germination. The soil is moist enough on the surface at this season for all seeds, and when lightly covered they feel the sun-heat sooner. Seeds of succulents, which should now be sown if not done in autumn, should not be covered at all, but sown on a fine surface, the soil previously well soaked with water ; Fern and Orchid seeds in the same way, merely covering the pan with a piece of glass or a bell-glass. Lobelia, Petunia, Wigandia, Pyrethrum, Coleus, and suchlike fine-seeded things, should be managed in the same way. Larger seeds may be covered lightly, and avoid with these too much water at this season : in moist soil no water is necessary until they have germinated, if the seed-pans are in a moist pit.

To mention all the seeds which should or might be sown this month, would embrace the most of the catalogue. Peas are a vexatious question : our first sowing of Sangster's No. 1 and Early Long Pod Beans was in January, covering the seed with a dose of wood-ashes. Onions should be sown as soon after the new year as possible ; we have sown them, 200 miles north of the Tweed, in the second week of February ; our summers are none too long to grow and mature the Onion crop, at least in the north : the immense fine-ripened Onions from Spain and Portugal are plump and hard in the shop-windows after our English Onions are all sprouting. Soil for Onions should be rich on the surface to start them ; they are not deep rooting : draw the drills entirely in rotten manure if possible, sow thin, and after the first thinning of the crop, give a dressing of guano to stimulate the young plants over the season in early May, when the ground is still cold ; this is the time when weakness in a quarter of Onions generally shows itself.

Carrots, Parsnips, Parsley, should be sown early while the soil is moist, and that they may get a good hold of the ground before drought sets in ; a dry, hungry soil is useless for these. The seeds of the two former being light, should be lightly covered ; a sprinkling of wood-ashes is a good covering for Carrots. Plump, well-grown French horn Carrots are much the most acceptable with the cook at all times for the dining-room ; the larger sorts as intermediate Carrots for general use. It is often recommended to dig in a layer of dung under the first spit of soil to make Carrots long ; they are said to run down for

the dung. We don't think the spit of dung has anything to do with the length of either Carrots or Parsnips. Soil for the Carrot should be rich, just as for any other crop, but it should be open in texture, and with a moist, cool bottom; the tap-root of the Carrot will go down a long way after moisture, which is the secret for long Carrots. The soft, hairy, finely-cut foliage points to the great demand the plant has upon it for water in dry summer weather. The moist boggy lands in Surrey grow Carrots well: when sown early in such land they will not readily go to seed; but on high gravelly soil they will be sure to bolt, and the roots will be all heart and woody. The same remarks apply to the Parsnip still more forcibly. The Irishman's tale of the Parsnip grown in the deserted pump-barrel, if a fiction, is certainly founded on fact. Parsley also should be sown very early, and requires a deep, rich soil: sow in drills and transplant a portion; sow shallow,—the ground is moist enough at the surface, and the sun not much power to dry. Celery, another of the moisture-loving Umbelliferæ, though a hardy native, must be sown in heat for early planting; in the south, for the main crop, it is time enough to sow in the open air the end of March.

There are a number of seeds which it is undesirable to sow too soon, as the chances are they will perish largely; for instance, the better sorts of the Marrow Peas will quickly rot in cold wet soil. Kidney-beans no one will think of sowing out of doors before May in the north, the second week in April in the south. Beet is time enough in April; for early use it may be sown in heat, and transplanted on a warm border. Cold and wet injures the vitality of many seeds reputed hardy—even cold and damp drawers in the seed-room—and when a failure comes the seedsman is blamed.

On the other hand, it is well known that the seeds of many things reputed tender will live through the winter though barely covered, and grow in spring; for instance, New Zealand Spinach, Nasturtium, Mignonette, and numbers of flower-seeds—and we have seen an instance of a Tomato which came up and grew most vigorous, and ripened a heavy crop of fruit in the open ground.

All seeds, supposing them to be good, should be sown thin; when the seedlings come up thick, they at once begin a struggle for existence, and starve each other, and thinning does not improve matters for the time; we have known whole beds of seedlings go off very quickly by being too thickly sown. Seed-beds should also be of rich soil: every living thing, when young, should be well fed. There is no doubt but there is quite three times as much seed sown on the cultivated surface of these islands as is necessary, more particularly in gardens. Secure good seeds, and sow them thin.

THE SQUIRE'S GARDENER.

NOTES ON HARDY CONIFERS.

BIOTA (THE EASTERN ARBORVITÆ).

THE handsome evergreen shrubs which constitute this group, are for the most part indigenous to China, Japan, Tartary, and Northern India. They were originally associated with the Thujas, of which they formed the second section, but are now separated into a distinct genus under the sectional name, by which they were distinguished from the American or Western species.

All the sorts in cultivation are found to grow freely in ordinary garden soils, but prefer a drier situation and a lighter soil than the Thujas; and though most of them are fully equal to the rigours of our winters in the open air, they succeed best where they are protected from the full force of violent winds.

The following species and varieties are among the most distinct and ornamental:—

B. Orientalis (*the Chinese Arborvitæ*), found wild in great abundance in mountainous districts in China and Japan, growing to heights of from 20 to 30 feet, was introduced into Britain about 1752.

With a general resemblance to the American Arborvitæ, it is readily distinguished, not only by the peculiar form of its cones, but by its much more sharply conical, almost columnar, habit of growth; compact, erect branches, and dense flat branchlets.

The branchlets have a warm light green colour in summer, which, particularly if the plant is growing in an exposed situation, changes to a brownish tint on the approach of winter.

Ever since its introduction this beautiful shrub has been one of the most conspicuous and highly valued ornaments of our gardens and pleasure-grounds; and, notwithstanding the many brilliant acquisitions to the list of hardy Conifers during the last twenty years, it has even yet few rivals for real elegance and symmetry of form, and it is still, as it richly deserves to be, extensively planted in the most choice collections.

Though quite hardy and of free growth in most districts, the finest specimens are invariably found where the soil is a deep light loam, the land well drained, the situation airy but sheltered, and plenty of space allowed for each plant to develop its branches on every side.

Like many other plants of a wide geographical range, the Chinese Arborvitæ is remarkably prolific in varieties, and among the finest and most distinct of these are the following:—*Aurea*, or, as it is popularly called, “Golden Globe,” is so very different from the parent, that it is difficult at first sight to realise the fact that it is not itself a species, but a mere variety, originating from seed saved from

Orientalis. This lovely dwarf shrub has an almost completely globular habit of growth, the branches so abundant and so dense as to suggest the idea of solidity. In spring and early summer the young branchlets have a most brilliant golden hue, gradually changing as they become matured to a light green; the effect of the plant as a single specimen on a small lawn, as a centre for a flower-garden figure, or in front of clumps of the larger-growing species, is striking in the extreme. *Globosa*, with the peculiar compact globular style of growth, but with light green instead of golden branchlets, is a fine companion plant to *Aurea*, with which it makes a pleasing contrast: *Compacta* is a very elegant, sharply conical dwarf bush, with abundance of branches densely clothing the stem from the ground upwards: *Elegantissima* has the compact columnar form of the species, and in summer its green colour; it changes, however, in winter to a bright reddish brown, the young branchlets in spring being tipped with gold: *Semper-aurescens* is a new and very interesting form of Continental origin, resembling the preceding in general appearance, but with a finer golden variegation, which it retains with more or less brilliancy all over the year; though as yet comparatively little known here, this pretty plant will doubtless soon be widely distributed: *Freneloides* or *gracilis* is another singularly beautiful and distinct variety, found first on mountains in Northern India, and, like the species, of an erect, compact habit of growth, but much more slender in all its parts; it is very distinct, quite hardy, and deservedly very popular: *Pyramidalis* is a distinct and handsome form, with more robust branches, denser branchlets, and a more compressed columnar style of growth than the species, and makes a superb lawn specimen.

B. Filiformis or **Pendula** (*the Thread-branched Arborvitæ*) is found wild in high mountain valleys in Japan, particularly on the Hakone range, forming a bush varying in height according to soil and situation from ten to twenty feet. From its handsome appearance, and freeness of growth, it is highly valued and extensively cultivated in Japan and all over China as an ornamental shrub.

It was first introduced into British gardens early in the present century, and, though very properly classed among hardy Conifers, it will only succeed in well-sheltered localities. A rich, deep, loamy soil, rather light than heavy, with the subsoil either naturally dry and porous, or thoroughly drained, is also an essential condition to its well-being, and must be supplied if a vigorous, healthy specimen is desired.

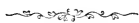
In favourable circumstances this curious and interesting plant forms a straight-stemmed, bushy-headed shrub or miniature tree, with long whip-cord-like pendant branches, rather sparingly clothed with small scale-like leaves clinging close to the stem; the branchlets are

numerous, and are disposed in clusters at irregular intervals on the branches. In summer the branchlets are of a light green colour changing in winter to a dark brown.

B. Japonica (*the Japan Arborvitæ*).—As its name implies, this species is a native of Japan, where it forms a bushy shrub rarely exceeding ten feet in height. It was first sent home to this country in 1860, and has proved itself to be quite hardy, and to grow freely under similar circumstances to *Orientalis* and its varieties, which it so much resembles that some have doubted its claim to rank as a distinct species. Whether a species or variety however, there can be no question of its being a great acquisition to our hardy Biotas, and of its worthiness of admission to the most choice collection of ornamental Conifers. In habit of growth it is more broadly conical than *Orientalis*, but equally dense, the branchlets more compressed and fan-like, and makes a neat symmetrical specimen plant.

B. Meldensis (*the French hybrid Arborvitæ*).—This distinct and interesting plant originated some years ago in Meaux, in France, from whence it was distributed as a hybrid between the *Arborvitæ* and Red Cedar. Its hybrid origin has been doubted by some of the highest authorities on such subjects, and it is now generally believed to be a seminal sport from some of the Biotas. It is quite hardy in Britain, if planted in a sheltered situation, and forms an erect, somewhat dwarf, bushy shrub, with slender, slightly drooping branches, disposed irregularly, but very abundantly, upon the stem. In summer it is of a light, slightly glaucous-green colour, changing in winter to red, or reddish brown. It is a pretty plant for a shrubbery or small lawn.

HUGH FRASER.



WINTER-FLOWERING ORCHIDS.

CÆLAGGNE CRISTATA.

THIS effective plant comes from the mountains of Nepal and Sylhet, where it flourishes at an altitude of several thousand feet. It is one of the best winter and early spring flowering species we have; nor can it be considered a novelty, since it has been in cultivation for the last thirty-six years. Its pseudo-bulbs, when fully grown, are about the size of bantam's eggs, and each bears two lanceolate, deep green leaves. Its flower-spikes bear from three to eight flowers—one, and occasionally two, being produced from each flowering bulb. These flowers are three to four inches across, and of the purest snowy whiteness, with the exception of the lip, which has five rows of yellow fringes down its disc. A good specimen plant is very effective when in flower, bearing from twenty to a hundred spikes. A plant from Chatsworth

was exhibited in London a year or two ago with ninety-seven spikes, some bearing seven fine flowers; while Mr R. S. Gates, of Manchester, has at the present time plants with nearly as many spikes upon them, and in the finest state of health and vigour. With the solitary exception of *Dendrobium Nobile*, this plant is the best to grow for a profusion of choice flowers at this particular season of the year. Well-grown plants, when in bloom, are literally one mass of glossy drooping foliage and snowy flowers. These latter are well nigh invaluable for all kinds of decorative purposes where choice white flowers are required. It is almost equal to *Stephanotis* for bridal bouquets, and has a far more graceful appearance in the elegant trumpet-shaped crystal vases which are now in general use for cut flowers and Ferns.

This plant does well in an intermediate temperature, or *Cattleya* house, where a moist atmosphere can be steadily maintained. The compost best suited to its acquirements is one composed of good fibrous peat, living sphagnum, with the addition of a little leaf-mould and coarse sand, taking care to provide abundant drainage, since this plant, like most others, is very impatient of stagnant moisture. While speaking of sand, I would caution gardeners against using this article indiscriminately, since some kinds in particular localities contain a large proportion of lime, which does not agree with plants in general. In my own experience I find this plant affects a shady position; bright sunshine it seems to have an antipathy to, much the same as *Odontogloss* and most other orchids from elevated habitats. When growing, it must be abundantly supplied with tepid water at the root; and frequent syringing promotes its growth, and keeps its pseudo-bulbs in a fresh and plump condition. These last are apt to commence shrivelling while the plant is in flower, during which time it should receive a good supply of water, so as to prevent this as much as possible. Care must be taken not to wet the flowers, since a few drops of moisture will spot them, and render them both fugacious and unsightly. The best way to flower this plant well is to induce a free and vigorous growth, taking care that the substance or nutriment in the pseudo-bulbs is not wasted by evaporation, instead of going to produce strong flower-spikes. The plant is now cheap, and should be grown by the dozen where choice flowers or plants for decoration are in demand during winter and spring. Seen under gas-light the flowers of this species are quite dazzling in their lustrous purity.

If care be taken to keep the flowers from becoming spotted, it continues in perfection for fully a month, and when grown freely is an object of floral beauty rarely rivalled and never excelled.

F. W. BURBIDGE.

THE ONE-SHIFT SYSTEM IN POTTING PINES.

Is it necessary to pot Pine suckers into small pots when taken from the old plants, shifting them on as required until the size is gained in which it is intended to fruit them? One thing in favour of small pots is, that a quantity of suckers can be put into less space. But when the full space can be devoted to them at first, there is a great saving of labour, and time is gained in fruiting by putting them into the pots in which they are to fruit. There is no check to the roots when potted on the one-shift system; and the system has great advantages in the case of suckers taken rather late in autumn, with the object of their being kept on the move all winter, to be got forward for fruiting the following autumn. Let it be supposed that good suckers are taken about the end of August, and that a quantity of new or well-washed 11-inch pots are in readiness. This size will be found quite large enough to grow fruit of good medium size for everyday consumption. Let them be thoroughly well drained, to the depth of at least two and a half inches, the last layer of crocks being rather fine, with a little rough loam or moss sprinkled over them, and all well dusted with soot to prevent worms from getting up into the soil, and to act as a stimulant to those roots that reach it. The soil is the next consideration, and we prefer a rather light fibry loam, that has been lying in a stack for twelve months, chopped up, and rejecting all that goes through a $\frac{3}{4}$ -inch sieve. The fibry part is all looked over, and nicely pulled to pieces by the hand, not making it too fine, but leaving it nice and rough. To every barrow-load add a 6-inch potful of soot, one of bone-meal, and one of half-inch bones; the latter, besides enriching the soil, helps to keep it open. The meal acts quickly, which is of importance now that plants are fruited off in not much more than half the time required formerly. In potting, each plant should be well firmed round the collar, for it will be observed that a plant that is firmly potted roots much more quickly than one which is left loose in the soil. If the soil is as described, let it be well beaten with a rammer: this is held by good growers to be an essential point, and its results prove it to be so. If space can be spared, put the plant into the house intended to fruit them, putting each in its proper position at once, so that there is no need for removing them afterwards. Scarcely any plant looks worse than a Pine when its foliage is broken and hanging about in an untidy manner. Set them on a hard and level bottom before filling up between the pots, which should be done up to their rims. If plunged in old tan, or material that will not cause too strong a heat, let it be pressed quite firmly; if the tan be fresh, heat will get too violent, and it should be laid loosely but higher between the pots. If the heat rises higher than wanted, take

hold of each pot, and move it backwards and forwards several times. This will leave a space all round, which lets extra heat escape ; when it cools down, press the tan close to the pots.

In the first stages of Pine-growing, we think bottom-heat is not so much wanted as is generally considered. If these young Pines were treated to a high bottom-heat, with a corresponding top-temperature, in which there would have to be a good amount of moisture, the plants, before ever they begin to throw out roots, would get long and weakly, and the centre quite close and blanched like Celery. If it ranges about 70° , so much the better for the plants. Let the house be kept pretty close, with gentle dewings night and morning on bright days, sprinkling the paths frequently, if found requisite, with but slight shading only when the sun continues bright for a length of time. The night temperature of the atmosphere may range about 70° for the first fortnight, or until the plants show signs of starting into growth ; and as the nights get longer, range the heat a few degrees lower, letting the temperature rise considerably in the day, when it can be done by sun-heat. If the house is light, and the plants not too far from the glass, they will grow gently all the winter ; and when the days begin to lengthen, then their advantage over those that were taken at the same time and put into small pots to be potted on in spring will be apparent. If all goes well, they will be dwarf, stiff plants by the end of May, when they should be rested for a month or six weeks, during which time give little or no water—no more than will keep the plants from suffering ; and with a moderate top and bottom heat they will stiffen a good deal in this time. When fruit is wanted by Christmas, increased heat should be applied about the middle of June. Now is the time that the bottom-heat is of most importance in getting all to start, and with a corresponding top-heat, they should nearly all be showing fruit in six weeks. Whenever they have fairly started to grow, we apply guano about every other watering ; but after fruit shows, at every watering, until the fruit begins to colour. Whenever I can adopt the above practice I do so, there being less labour attending it, and there are several things in its favour. I think the planting out system is a good one, only a whole house has often to stand empty for a few plants to finish off. When in pots they can be removed into a vinery or any other spare place, although a little lower in temperature, when just beginning to change colour—they will not take any hurt ; but not before their colouring has commenced. If full space cannot be devoted to them when put into 11-inch pots at first, and they are plunged pot to pot, not much more room will be taken up than when they are put into 8-inch pots.

A. HENDERSON.

THE PEACH AND NECTARINE.

THESE two fruits are classed together. They not only belong to the same genus (*Amygdalus*), but the same species (*persica*) includes them both. The Nectarine differs from the Peach in being somewhat less, and in having a smooth skin, the skin of the Peach being downy. There have been instances of their being both found on the same branch, and single fruits have been found with the skin of the Peach on one side and that of the Nectarine on the other. They may each be arranged under two classes—viz., the free-stone Peaches and Nectarines, the flesh of which separates readily from the stone and skin; and the cling-stones, which have a firmer flesh adhering to both the stone and skin. The cultivation required by the Peach applies also to the Nectarine.

There is considerable difference of opinion among botanists as to the native country of the Peach. Persia has been considered by some to have been the place of its origin. “Decandolle is, however, of opinion that China is the native country of the Peach. His reasons are, that if it had originally existed in Persia or Armenia, the knowledge and culture of so delicious a fruit would have spread sooner into Asia Minor and Greece. The expedition of Alexander is probably what made it known to Theophrastus, B.C. 322, who speaks of it as a Persian fruit. . . . Admitting this to be the country, how can it be explained that neither the early Greeks, nor the Hebrews, nor the people who speak Sanscrit, and who have all sprung from the upper region of the Euphrates, had grown the Peach-tree? On the contrary, it is very probable that the stones of a fruit-tree cultivated from all antiquity in China may have been carried across the mountains from the centre of Asia into Cashmere or Bokhara and Persia. . . . The cultivation of the Peach-tree, once established at this point, would easily extend on one side towards the west, and on the other by Cabul towards the north of India. In support of the supposition of a Chinese origin, it may be added that the Peach was introduced from China into Cochin China, and that the Japanese call it by the Chinese name *Too*. The Peach is mentioned in the books of Confucius, fifth century before the Christian era; and the antiquity of the knowledge of the fruit in China is further proved by the representations of it on sculpture and on porcelain. The above are some of the arguments adduced by Decandolle against the commonly-received opinion that the Peach originated in Persia.”*

The Peach was introduced into this country more than 200 years ago, when most likely it was brought from France, where it had

* Treasury of Botany.

been cultivated a long time before that period. In the south of France it succeeds as a common standard; but in the north it requires to be grown against walls. In Britain it succeeds outdoors only against walls with south aspects; but even under such favourable conditions, outdoor crops are very uncertain over the greater

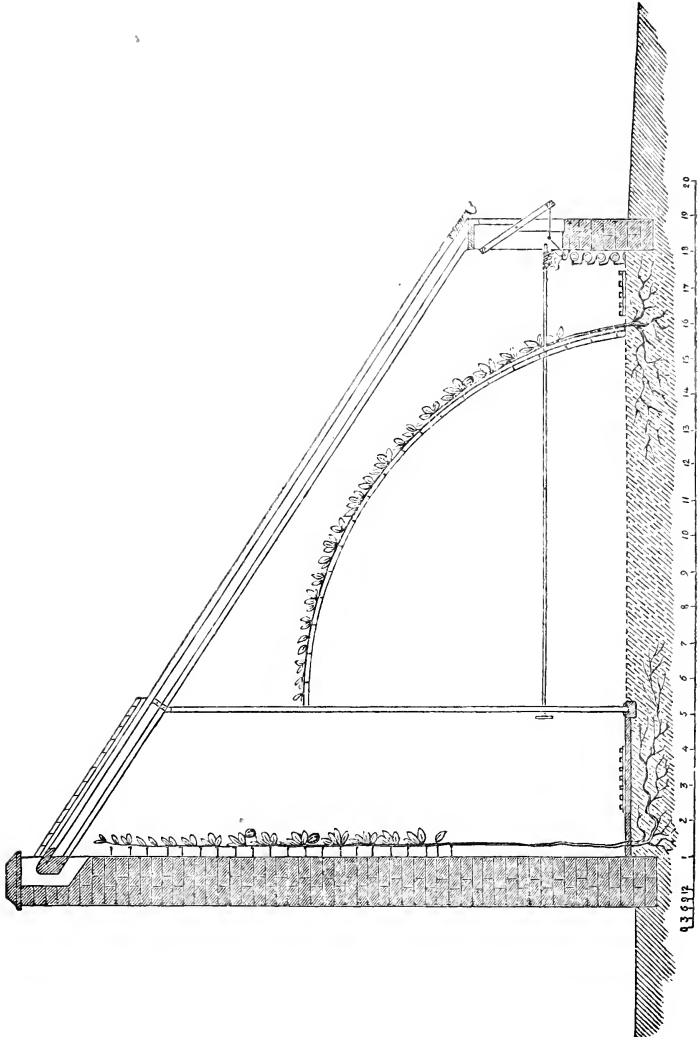


FIG. 9.

part of the kingdom. It is only under glass that good annual crops can be produced. The Peach season can, by early forcing

and growing it in cool houses, be extended to seven months of the year. I have for years in succession gathered ripe Peaches the last week of April, and continued to do so till the last week of October.

PEACH-HOUSE FOR EARLY FORCING.

It is needless to occupy time and space with arguments to show that for the early forcing of the Peach a lean-to house, similar to that recommended for the early forcing of the Vine, is the best. In all respects it may be the same, except in the trellis-work for training the trees to; and even in this respect the arrangement may be the same, except that the roof should be wired more closely for Peaches than for Vines. However, in those days of clear glass, making hothouses much lighter than they could be made in former times, I would recommend the arranging of the trees as shown in fig. 9. The curved trellis in the centre of the house, with room between it and the front of the house, gives great convenience and facility for attending in every way to the trees. At the same time, the greater part of the back wall can be covered also, thus giving a larger fruit-bearing surface than when the trees are trained closely up all the way under the roof. The arrangement shown in fig. 9 gives a greater variety of position and temperature, and consequently a longer succession of ripe fruit. The quantity of pipes for Peach-forcing need scarcely be so much as for the Vine. Four rows of 4-inch pipes along the front and both ends of a lean-to house 16 feet wide, will be sufficient. A steaming-tray should also be attached to the pipes.

I have ripened Peaches in April in houses not more than 8 feet wide—mere glass cases; but such small houses are so very easily influenced by the fluctuations of the weather, that they should never be adopted. And a house of the dimensions of fig. 9, I consider not too large. But this is a matter that admits of modification, according to circumstances.

PEACH-HOUSE WHEN RIPE PEACHES ARE NOT REQUIRED BEFORE JULY.

When ripe Peaches are not required before July, the span-roofed form of house, the same as has been recommended for late vineries, is the best. It should, of course, run north and south. The span-roofed form affords a great amount of training surface, and gets the sun morning, noon, and evening. The wires should be fixed at 14 inches from the glass, and 8 inches apart. There are some fine examples of span-roofed Peach-houses at Floors Castle, 60 feet long, 20 feet wide, and 16 feet high. The whole surface of glass from the bottom of the front lights upwards is available for being furnished with bearing wood, as it gets ample light. For heating such houses, there should be at least three rows of 4-inch pipes round each side and both ends,

and a steaming-tray along the front. There cannot be a greater mistake than that of under-heating with either pipes or boiler-power. It is much safer and more economical to err on the side of having too much than too little. It saves fire, and keeps up the required temperature without violently heating the pipes.

For late crops to be ripened without fire-heat, and when the object is to have Peaches on to the end of October, the span-roofed form of Peach-house is also best. At the same time, when an existing garden wall can be covered with a lean-to glass roof, it answers perfectly well. A house of this description—say 11 feet wide, with trees covering the whole back wall, and so far up the roof from the front as not to shade the trees on the back wall—gives great space for Peaches. There should be ample ventilation at front and top, kept constantly on after all danger from frost is over. I have gathered Peaches—Walburton Admirable—as late as the 24th October at Archerfield, one of the earliest parts of Scotland; while earlier varieties in the same house were ripe the middle of August. In a house of this description there should always be a flow and return pipe, to keep frost from the trees when in blossom. I have known Peach-blossom destroyed in narrow lean-to Peach-houses by severe spring frosts. And with the means of keeping frost out, the floor of the house is available for flower-garden plants.

In all Peach-houses ventilation should be amply provided for. In the case of very early forcing, when the crop is all gathered before the 1st of June, the top and bottom ventilation should be very abundant; indeed it is a good plan to have the roof constructed so that the lights can be partly, if not wholly, removed for two or three months in the heat of summer. At all events, the ventilation should be amply sufficient to keep the house as cool as possible. The whole of the side lights of span-roofed houses should open, and the top ventilation be made so as to open to a considerable extent. In recommending the covering of existing Peach-walls with glass, I am fully convinced that this will always be found satisfactory, inasmuch as without doing anything else to the Peach-trees, if in other respects they are in moderate condition, the mere covering of them with glass will not only insure crops of Peaches every year, but all blistering of the foliage, and most of the other ills which beset the Peach in the greater number of the gardens of this country, will be got rid of. At Archerfield I had a Peach-wall covered on which the trees formerly did very little good, and after being covered with a lean-to house, they speedily became healthy and vigorous, annually bearing great quantities of fine fruit. The same applies to the Peach-wall at Dalkeith, and other places that could be named.

FLORIST FLOWERS.

THE HOLLYHOCK.

THE Hollyhock—a native of China—was introduced into European gardens three hundred years ago. In our short recollection, with few exceptions, the flowers produced from seed were nothing superior to broad smooth disks of red, maroon, purple, yellow white, and other intermediate hues, crowned by a tuft of stamens. The vast improvement that has been attained within the last twenty years is fully demonstrated in the numbers of beautiful double flowers realised from every single packet of sound seed. A single variety is now the exception; for this we have to thank the perseverance and skill of such nurserymen and horticulturists as Messrs Barron, Charter, Paul, Downie, Laird, & Laing, Roake, Parson, and others.

The Hollyhock is of scarcely less importance to a well-appointed garden than the Dahlia: so inseparable are they, that their names spontaneously come in the same utterance by most people. There are many reasons why they should be spoken of unitedly. For example, their dissimilarity in flower, in leaf, in form, is very wide; and still how telling the effect when growing in combination—how immensely the lofty bearing of the Hollyhock adds to the massive boldness of the Dahlia! In the flower-garden they are again inseparable, where they combine in giving effect to clump or line. Nor does the association end here. Together we look for them in the drawing-room; and certainly never fail to find them side by side on the exhibition table winning similar awards.

The Hollyhock is a splendid subject to light up the sombre shades that sometimes prevail in the shrubbery, as it is not at all particular as regards aspect or surrounding; provided that it is not altogether environed, or excluded from sun and air, it will thrive wonderfully. But, though thus accommodating, it would dwindle if planted amongst the roots of an old Ash or the like. It would there be pilfered of any sustenance prepared for it by the greedy feeders of the tree. Nor is it satisfactory to have the plants too much overshadowed by branches if avoidable; the drip from such is hurtful to most plants.

Propagation.—This is accomplished in various ways—viz., by eyes, from cuttings in the usual form, divisions of the root, and also by seed. Suppose we glance at each briefly, considering first how to raise plants from seed. Speaking first of the quality of the seed, permit me to advise that the cultivator's sanguine hopes should not be blasted by purchasing spurious trash in the name of genuine quality. Let him buy only from reliable sources, in order to get superior sorts.

Early in June is considered to be the best period of the year to sow the seed, which affords ample time to establish strong plants well before winter sets in. Some people sow the seeds on a well-prepared border in the warmest quarter of the garden, and succeed well enough on the whole; but I would rather advise to sow in boxes, and cover with hand-glasses, or have them placed in a cold frame. The boxes should have holes in their bottom, with open drainage, to allow the water to pass freely off. The soil itself should be three parts light rich loam, with sufficient leaf-mould and sand intermixed to make it porous. After scattering on the seeds, a covering of half an inch ought to be sifted over them, then the entire body of the soil moistened through a fine rose. Preserve the soil in the boxes from getting too dry by light shading when the sun is full upon them, and keep them rather close until the seed-leaf is fully expanded, but at the same time guard against allowing the interior of the frame, or

hand-glass, getting excessively heated. When the seedlings can be easily handled, they may then be dibbled into lines in the frame, on a prepared bed for their reception, well watered through a rose, the sashes put on, kept pretty close and shaded for eight days, then give additional ventilation, and remove the shading by degrees, and subsequently the sashes.

Lift and pot the plants with as much soil about their roots as will adhere, and replace them in the frame over winter, giving abundant air during sunshine and mild days, and not neglecting to have them always moderately moist at the root.

After-Culture.—What we have first to consider under this head is the preparation of the ground which the plants are intended to occupy. This ought to be deeply trenched and well manured some months prior to planting out, and again treated in the same way just before planting out in April. At the latter end of April, plant out in lines, 3 feet between plants, and the same between rows. Water them if the soil be dry. Invert a pot over each plant should the weather threaten frost, but uncover them daily as soon as the frost is gone again, replacing them in the evenings until all danger of severe frost is past. Supply each plant with a firmly-fixed stake, fully 3 feet above ground, as soon as the plants have reached about a foot in height. Water copiously at the root in dry weather. After they are well established, and are in active growth, also apply the syringe freely in the evenings after hot sunshine, to freshen the foliage and prevent red-spider getting a footing. Thin out the flowers when they appear in clusters, so that their quality may be justly judged when they open. These points attended to, and the stopping of the growth 6 feet above ground, the thinning and cropping off of the side shoots is all that need be advised regarding seedlings.

Propagation by Cuttings.—Cuttings should be taken from the base of the stem when they are a little more than 2 inches long. Cut them away close to the junction, pot them singly into thumb-pots, and plunge them into a half-spent hotbed. Keep them close and shaded until rooted; then admit air gradually, until they are inured to full exposure. Be rather temperate as regards water until it may be assumed that the plants are well furnished with roots, after which give unsparingly. Never permit the plants to get pot-bound on any consideration, but make it a rule to give larger shifts as soon as their roots net the balls of soil. Division of the roots is a simple process, and is effected by splitting up the stem and root into as many parts as there are sprouts about the stem. Pot and afford them the protection of a cold frame, keeping them moderately close and warm for the succeeding ten days. Multiplying by the eye is a simple process also, and is performed by cutting the side shoots into as many pieces as there are eyes; and the process consists in using a knife with a keen edge, cutting in the solid of the stem below each eye: cut also away the leaves, but leave the footstalk adhering to the eye; cover the eyes fully a quarter of an inch after arranging them rather thickly together in pots, making the footstalks of the leaves stand erect above the soil. Treat as recommended for other cuttings. These side shoots are best obtained in the latter end of summer, just prior to the wood becoming too hard.

General Remarks relating to Plants raised from Cuttings, and which are cultivated for Competition.—Of necessity, some difference exists in the general culture of those plants under this heading and that of seedlings. There is no difference regarding the preparation of the ground, and other details which I need not rehearse; but at the risk of repetition, permit me to counsel against

ever permitting the plants to get pot-bound, and that they be strictly watched and covered at night from frost after being planted out. Instead of planting 3 feet both ways, as recommended for seedlings, allow 3 feet between plants in the rows, and 4 feet between the rows. Mulch the beds with manure in June, and by every means encourage vigorous growth. Earwigs should be hunted and kept under, as advised in last month's number of the 'Gardener' in treating of Dahlias. The weaker sorts of named kinds are more subject to the attacks of red-spider than seedlings; and in again referring to this pest, allow me to make mention of a very completely constructed syringe, which I saw in the possession of my friend Mr Marshall, of Kingston Grange—a most enthusiastic and successful cultivator of the Hollyhock. This syringe is of the usual form, with the additional appendage of a swan-neck tube, attached by a screw exactly the same as that of the different roses. It can be removed at pleasure, and a rose fitted on in its stead. The other end of the tube has a receptacle furnished also with a screw to fit those of the roses. The object of this addition to the syringe is the more readily to apply the water underneath the leaves, where the enemy does most mischief. Mr M. disagrees with the practice of syringing overhead. One stem to a plant is sufficient, and all others carefully remove; but the one left should not be altogether dismembered of its side shoots, but these ought to be pinched back to the second eye—not, let it be observed, after those laterals have been permitted to make strong lengthy growth, but before.

“Top over” the spikes at from 7 to 9 feet, according to their strength, and thin out the flowers, leaving no more than are sufficient to cover the spike and protect those spikes intended for exhibition from the weather. A good plan to adopt is to fix a narrow hoop to the upright stake which supports the plant, bringing the hoop over, or making it to encircle the stem; another similar hoop is fixed at the top of the plant, then laths are stretched and fixed to both hoops; this makes a substantial frame for the coverings of hexagon netting, or any other light material.

The following varieties are all first-rate, and no one need scruple to choose from them; all that they require to consider is the colours:—

NEW SORTS.

John Stewart, deep rose, flowers large and perfect. Mrs James Laing, bright rose, handsome form, good spike. Mrs Laing, rose lilac, one of the foremost. Perfection, white suffused with salmon, great flowers, most perfect in form. War Eagle, glossy black, the most perfect and darkest of its class. David Lowe, pale rose and crimson, splendid both in individual flower and spike. John Gair, rosy peach suffused with crimson, fine flower and grand spike. R. T. Mackintosh, rich rose crimson, very constant, extra.

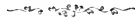
CHOICE OLDER SORTS.

Andro Signet, pure white; perfect in form, extra good substance, the first of white flowers. Fredgater, pale yellow, early and constant. Her Majesty, white, delicately-shaded pink, which is most present in dull weather. Ida, buff suffused and touched with rose, good flowers but indifferent spike. Invincible, rose with touches of deep salmon, extra. John Tweedie, a good variety of the rose crimson type. James M'Indoe, like the former, but better spike. James Whitton, lively rose crimson. Lord Stanley, deep ruby crimson, of the finest form in flower, grand spike. Lady Rokeby, rose blush, splendid spike, and flowers the first of the best. Lady Cliefden, rose crimson, fine in the fullest

sense of the word. Queen of Yellows, quite worthy of the name, being the best yellow extant. Mrs Downie (improved), bright orange-shaded rose. Octoroon, dark mauve maroon, immense flowers and handsome spike. Mrs P. Bruce, B. Tod, rose peach, first-rate. David Marshall, dark rose, a good flower and spike. Earl of Rosslyn, brilliant scarlet, splendid form of flower and spike.

Then there are, among hundreds of others, the following, all excellent, but we cannot afford room to describe them. Beauty of Mitford, Andrew Goodfellow, Archbishop David Henderson, James Anderson, Mrs Bolton, Model, Ruby Queen, Queen of Primroses, R. B. Laird, Richard Dean, Sovereign.

A. KERR.



MAKING ASPARAGUS-BEDS.

ASPARAGUS-BED-MAKING, like many other garden operations, ought not to be regulated by one uniform rule through the length and breadth of the land. It will be readily admitted that there is a great diversity of soils and subsoils, not only in districts wide apart, but in the same locality. I have seen Asparagus-beds in some districts made so high, that they stood above the natural level of the ground to the height of 1 foot and 18 inches, besides having ditches between each bed to the depth of 2 feet. What could be the ruling idea in making such beds I cannot take upon myself to say. In low situations where the subsoil is a tenacious clay, it is well to make the beds somewhat above the ground-level, so that the roots may have sufficient depth to extend, without penetrating an uncongenial subsoil. This may be well enough understood by those who have been accustomed to execute such work, but may not be sufficiently explicit to those who are beginners or amateurs, in behalf of whom, I conceive, 'The Gardener' takes a lively interest.

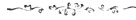
Although Asparagus is a native of this country—and being so, it is a hardy plant—it has often to put up with very indifferent culture and rough usage at the hands of those who would like to produce it in good usable condition without first making themselves acquainted with the details of preparing beds that will give satisfactory results. I have frequently seen Asparagus sown upon a piece of ordinary garden ground without any further preparation than that of merely digging it. Very seldom is a piece of ground found of sufficient depth and richness to grow the vegetable properly without any further preparation or addition. Indeed, to have Asparagus in a condition to be worth the room it occupies, the ground requires a very thorough and careful preparation, more so than in the case of any other vegetable. If the situation be low, with a tenacious subsoil, the ground should be deeply drained to begin with; for although Asparagus is found in its wild state growing near the seashore, where it of necessity receives

plenty of moisture, it is always in light soil, where water passes freely off. Under such circumstances it never attains to the size and tenderness to which it is grown under liberal culture, and on account of which its delicate character is developed. We have lifted it in its smaller and more wiry condition from the seaside, and grown it into good useful Asparagus the third year after planting it in rich, well-prepared soil.

The old way of making Asparagus-beds was in most cases to raise the beds a foot above the adjoining ground; and when the beds are of considerable width, there is no objection to thus elevating them. Some years ago I had the conducting of alterations and improvements in pleasure-grounds where the top-soil was of a rich loamy nature, and the subsoil approaching to what may be termed 1-inch earth; so that after removing the top-spit and reserving it for particular purposes, the lower soil was sufficiently good for ordinary shrubs. The top-spit, after lying in a heap for eighteen months, and having well worked into it twice its own bulk of strawy dung from an open yard where young horses had been fed, the whole was carefully turned over and mixed during summer; and in September and October this heap yielded the most abundant crop of Mushrooms I ever had anything to do with. There was no artificial spawning. In using this compost in preparing Asparagus-beds, about 15 inches of the common garden-soil was dug out, making the beds 4 feet wide. A foot deep of the compost was put into the beds, after making sure of perfect drainage; then 4 inches of well-rotted dung, with a little of the natural soil that was turned out of the beds; the whole was thoroughly mixed together; and I then proceeded to plant. In a 4-foot bed leave a space of about 10 inches in the centre and stretch a line at each of the marks, then with a spade make a drill or opening from 7 to 8 inches deep, bringing the soil removed in so doing towards the sides of the bed. Having provided yourself with good healthy young plants—one or two year old—plant them perpendicularly at 6 inches apart in this opening, leaving the crowns just level with the soil. Press the soil firm to the roots. Indeed the whole bed should be well firmed down by treading before planting is commenced. Another row on each side of these two gives four lines, which are sufficient for a 4-foot bed. When all are planted, cover the crowns over with 2 inches of the common garden-soil. When this is finished, the beds will be 8 or 10 inches higher than the ordinary level, and they will ultimately sink to about 6 inches. When left higher than this, they are very liable to be injuriously affected by the heats and droughts of summer. Beds thus prepared and planted yield good returns the second year after planting. Where Asparagus is required to force early, plants that are four to five years

old are best for this purpose. I have forced them when three years old, but prefer them a year or two older. When older, they are not so satisfactory, but are best when the roots are all in a nice, active, healthy state, and before any portion begins to decay. Where forcing is carried on, it is necessary to sow and plant a portion according to the demand every year. Asparagus should be sown in deep, rich, well-worked soil; chalky and gravelly soil, if possible, to be avoided. I have often found the roots of young plants 2 feet deep where the soil was good and well drained. It can never thrive where the roots are annually rotted by stagnant water, and it should always be guarded against.

(GEORGE DAWSON.)



UNDER-GARDENERS.

I DON'T think your correspondent J. S.'s remarks on the above are any more than just. In the first place, he says when the master puts his young men in the "way" of acquiring a good practical knowledge of their work as operatives, &c. &c., his duty as a schoolmaster ceases.

Why should it cease? Surely not to their own advantage. J. S. has as much authority to state, that if a house of Vines is watered, and the heat turned on, one may expect well-finished bunches of Grapes at the end of six months without any more attention, as to say that the head-gardener is "at any time" to withhold his comments, advice, or encouragement. There are exceptions to all rules; but, as a rule, young men seeing the head-gardener withhold his more mature knowledge of general gardening get callous or indifferent. The first opportunity that presents itself, they leave. The exceptions "may excel" when they find the reins of government, *as it were*, fall on their own shoulders; but no conscientious gardener "will give up teaching" while he has anything to impart.

J. S. goes on to say that the first and most essential thing is to be an efficient workman; he must be civil and good-natured. These qualifications are a passport to success "in themselves." Intellectual ability is tolerated, *if* they can handle the spade or hammer in a tradesmanlike fashion.

Has J. S. ever had to do with a young man whose *intellectual ability* was even above mediocrity that could *not* handle either spade or hammer? We pass his remarks on "labourers *versus* journeymen" by merely stating that if he would give the tailor or the apothecary the same amount of attention he gives the coal-miner, he will have no cause to complain (we think) of want of interest in the discharge of their duties.

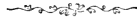
We have our own opinion, too, about character-giving, but cannot see it in the same light as J. S. No "*honourable*" gardener, let him be as good-natured as it is possible, *can* give a young man a character in his hand, and then, when referred to, deny it. Our idea of the "honourable" man is, if a character is to be given to an employee, to state the simple truth to the deserving; you can say no more. On the other hand, to the empiric say candidly, "That your inability to do in a satisfactory manner anything in connection with your profession, forbids me saying one word in your favour." Who knows but there may be the "smallest spark" of *pride* in that man; that the reproof may be kindled, and may be the

turning-point of his existence? whereas, in these "confidential characters," he blames the world for not appreciating his abilities, instead of thinking for a moment that the blame lies on himself. J. S.'s concluding remarks are rather "staggering." We have been in one or two of the midland counties of England, and must say that there must be a great reformation since that time if the civility of the natives much exceeds that of the Scotch. J. S. must be labouring under a hallucination when he states that young men going to England (after serving an apprenticeship in a "gentleman's" garden, even in Scotland) would have any doubts about addressing a superior. J. S. should bear in mind that there is a limit even to civility—any person going beyond which, in our opinion, appears ridiculous.

In conclusion, we agree with our Editor's remark that journeymen *are not* overpaid at 17s. per week, even with the perquisites they generally get. But there is no allowance made for the time they are in a nursery, where they are anything but overpaid; and in such a season as this there will be little else than broken time.

CALEDONICUS.

[We are at a loss to understand how a head-gardener can direct the proper management of a garden establishment without teaching his subordinates.—ED.]



ALLOW me to say a few words on the remarks made in reference to under-gardeners, by J. S., in your January issue, which I heartily endorse. I do not mean to go over the ground again, but rather wish to supplement him, where, according to my mind, he stopped short. He says, and says truly, that to attempt to teach some youths is like throwing pearls before swine; and further on, something to the effect that permanent labourers are generally to be preferred to journeymen-gardeners. I agree with him entirely, so far as my experience goes. Now, I ask what he did not ask, Who is to blame? I think it a disgrace to the profession that, in this nineteenth century, it should be said that common garden-labourers are better qualified for the general work of a garden than men who call themselves gardeners. Who is to blame? Without hesitation I answer, head-gardeners.

How can it be otherwise? When a lot of young men are engaged, the first question they generally ask is, "What's the pay?" and are generally answered, 14s. 15s. or 18s. per week, as the case may be. Thus, at the very outset, before the head-gardener can possibly know who are worth the money and who are not, each and all are assured of what amount they are to receive. Some of them are possibly underpaid, and some are *overpaid*—yes, *overpaid*, for many professed gardeners are not worth half what they receive.

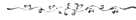
[This applies to all classes, as well as to gardeners.—ED.]

Instead of promising men a certain pay, whether they are worth it or not, why not state that they will be paid according to ability? As the general system is at present, every encouragement is given to men of indolent habits to practise those habits; while those who are really in earnest to do their duty efficiently and expeditiously, are kept in check by the knowledge that it is all one whether they trifle their time or not, so far as present reward is concerned. I have often known men, when remonstrated with on their careless way of doing things by their fellow-labourer or foreman, turn round and tell them that they got as much thanks and pay, and would get as good a character when they left, as those who

tried to do their best. I do not contradict the statement, that the best men are generally most successful in the end ; but I do say that the present uselessness (I can use no other word) of under-gardeners is chiefly due to the present pernicious system of rewarding all alike. Under-gardeners are undoubtedly underpaid, as a rule ; but as long as they are all paid alike, whether they are good or bad, so long will they continue to jog on, never caring nor thinking whether they are *really* gardeners or not. But let head-gardeners adopt a system of paying according to ability, and then under-gardeners will become better workmen, giving more satisfaction to all concerned, while decidedly inferior ones will be obliged to try the besom of the scavenger or shovel of the navy, as being a better paid job ; and then gardening will cease to be disgraced by misnamed gardeners.

AN UNDER-GARDENER.

[We have several communications on this subject, but think our readers will not be greatly interested in much more of it.—Ed.]



NOTES ON TODEAS.

TODEA SUPERBA is one of the most beautiful of all Ferns, and worth a place in the most select collection. A well-grown plant will be from 2 to 3 feet in diameter ; and when this result is attained, and the fresh green semi-pellucid fronds droop gracefully on all sides, it is an object of great beauty.

Many persons have failed in the cultivation of this plant by attempting to grow it in too high a temperature ; but when grown in a cool fernery, and plentifully supplied with moisture both in the atmosphere and at its roots, it will be found to succeed well, and its fronds will not only be stouter and broader, but also of a better colour, than those grown in a hot stove. The plant is a native of New Zealand, and has been imported in considerable quantities, some of the trunks being from 1 foot to 18 inches high, and from 6 to 9 inches in diameter. These throw up fine heads of their feathery plumes if properly treated, and eventually make splendid specimens. *Todea superba* is grown in quantity by P. N. Fraser, Esq., Edinburgh, and also by Provost Russel, Mayfield, Falkirk, the latter gentleman having some fine specimens in the best possible condition.

In cool ferneries this plant will grow remarkably well, planted out in a moist situation, and soon forms a conspicuous object ; or they may be successfully cultivated in a glass case specially contrived for them. When placed in a suitable position, this plant grows rapidly ; and I have found them grow best in a compost of peat, living Sphagnum moss, and coarse river-sand, taking particular care that the pot is thoroughly well drained. The plant under discussion, like many others, is partial to an abundant supply of moisture overhead and at

its roots; but it will speedily show signs of weakness if the compost turns sour through bad drainage or a superabundance of stagnant moisture. When grown in pots in a case, provision should be made for plunging the pots, common sand being a good material for this purpose. The surface may be planted with *Selaginella* after the plants are arranged, or a layer of living *Sphagnum* may be spread between the pots, which will not only add to the neatness of the whole, but also greatly assist in maintaining an equable state of heat and moisture at their roots—a very important point in the culture of these delicate plants. The plant is freely propagated from spores, which are borne in profusion by well-established specimens; and I have now several dozens of nice little plants pricked out, that have come up promiscuously on the pot-tops.

Todea pellucida is another nice feathery species of this genus, that does well treated like the preceding. Its fronds are longer, and not so finely cut; but good healthy plants are very ornamental, either grown in cases or bell-glasses. Planted out in cool ferneries in the natural style, it soon makes itself at home.

Todea Wilkesiana may be considered one of the rarest, and at the same time one of the daintiest, of Tree-ferns. It has a caudex varying in height from 1 to 2 feet, and fronds something resembling those of the last-mentioned species. It grows well in a glass case in the tropical fernery, but is not yet in general cultivation. Messrs Veitch & Sons, Chelsea, have a fine specimen of this beautiful species in their collection.

Todea (africana) barbara.—This is very distinct in its appearance, when compared with the semi-pellucid delicacy of the preceding species. It has a large irregular trunk or caudex, and fine imported specimens weigh from 10 to 20 cwt. each. The noble specimen in the large temperate conservatory or winter-garden at Kew weighed 15 cwt. and is one of the finest specimens in this country.

The black massive caudex bears numerous crowns of leathery fronds which are decidedly opaque, and vary in length from 2 to 6 feet. Good specimen plants form noble objects for the natural fernery or conservatory. It has a robust constitution, when compared with those of its diaphanous congeners. Imported trunks root freely in a compost of neat fibrous loam and sandstone. When thoroughly established it requires but little attention, while its distinctive appearance cannot well be supplied by any other plant in cultivation up to the present time.

GARDEN IMPROVEMENTS IN SCOTLAND.

BALCARRES.

BALCARRES, the seat of Sir Coutts Lindsay, Bart., is pleasantly situated on a rising eminence about three miles north of the Firth of Forth, on the south-east coast of Fifeshire.

Balcarres House, formerly the residence of the Earls of Crawford and Balcarres, is a substantial old building, to which considerable additions have been made by the present and former proprietors. It was in a small room of the original building that Lady Ann Lindsay, afterwards Lady Ann Barnard, wrote the fine old ballad, "Auld Robin Gray." From the situation of Balcarres extensive and varied views are obtained along a rich and fertile coast; and far out into the German Ocean is seen (in mid-ocean) the beautiful Island of May, with its beacon-lights and its carpet of green verdure; and westward along the coast, and far inland, the prospect is varied and beautiful, embracing a number of thriving towns, and a rich agricultural and mineral district.

The last object the eye can discern in the far west is the lofty summit of Ben Ledi; while looking southwards the eye takes in the whole range of coast and country from Queensferry and the Pentland Hills in the west, to St Abb's Head near Berwick-upon-Tweed in the east; and, looking directly south, on the opposite side of the Forth is seen the picturesque little town of North Berwick, with its lofty Law (hill) immediately behind; while a little further east, and in the waters of the Forth, stands that wonderful mass of solid rock (the Bass) whose sole inhabitants are Solan geese. Looking to the south-west the eye takes in the shipping port and town of Leith; also Edinburgh, its Castle, Arthur's Seat, &c. &c.

On the north side of the Forth, and immediately south of Balcarres, stands the village and parish church of Kilconquhar, with its beautiful and picturesque loch of fresh water, covering nearly 90 acres of land: all combine to make Balcarres very interesting in point of view, scenery, &c.

The park in which the mansion-house and gardens are situated is of great extent, and has a gentle declivity to the south, and contains a number of fine old trees, amongst which are several fine old Hollies, including two very fine specimens of the Queen Holly, denoting great age. We likewise observed two grand specimens of Evergreen Oak, which were planted in the year 1616. From their healthy condition, they have the appearance of being well cared for. On approaching the kitchen-garden from the west, we first came upon the gardener's house, a very neat, substantial, and commodious building, well ornamented with choice Roses and standard Hollies. The kitchen-garden is about 6 acres in extent, and is enclosed and divided into three divisions by stone walls 12 and 14 feet high. The first division we entered consists of about $1\frac{1}{2}$ acre; and on entering there is a very romantic rockery containing an extensive and varied collection of British Ferns, Alpine plants, &c. A portion of this division is divided with neatly-kept Yew hedges, and contains modern designs of flower-gardens, in which are collected a choice and extensive assortment of Roses and herbaceous plants. We may mention here that the Rose Souvenir de la Malmaison is very extensively grown in this garden, and with good effect. Mr Adamson seems to take this Rose under his own peculiar care. The plants are taken up in autumn, after the wood is thoroughly matured, and planted at the bottom of a south wall with a little kindly soil thoroughly worked in among the roots; and after all danger of frost is

over, they are carefully lifted and planted out again in their old position, the ground meantime having been thoroughly trenched and well manured, and a good portion of fresh soil added to the beds [an excellent practice.—ED.] With this treatment they grow most luxuriantly, and produce blooms we have never seen equalled. The principal forcing-houses are in the above division, and occupy a south wall about 320 feet in length. They consist of a large greenhouse, four Vineries, two Peach-houses, and a Fern-house. On the north of this wall are a number of roomy sheds, Mushroom-house, seed-room, dwelling-house for garden-assistants, garden-office, &c. Exotic plants are extensively grown here; and flower-forcing is carried on to a considerable extent during the winter and spring months: likewise the forcing of Strawberries is extensively and well carried on. Mr Adamson's treatment of these differs in some respects from that which is generally practised. Small runners are taken off about the end of August; these are pricked out pretty thickly into beds, and are allowed to stand over till the following July, when they are carefully taken up, potted and treated in the usual way. By the above means they never fail to produce fine crops. Vine-growing has always been a great success at Balcarres, and the pot-Vine (Black Hamburg) with its thirteen bunches sent through to the International Fruit-Show at Glasgow last autumn, very deservedly took first prize in this department.

The next division is the kitchen-garden proper. It contains $3\frac{1}{2}$ acres, and seems to be under thorough practical management, always producing abundant crops of fruit and vegetables, particularly small fruits; Gooseberries and Strawberries, in particular, being very superior in size and flavour.

The third division consists of about $1\frac{1}{2}$ acre, and is principally occupied as an orchard. In this division, however, is the fruit-room and a large pit filled with stove-plants, also Melon and Cucumber houses, Strawberry-pit, and frame-ground. Near the top of this division stand two or three Irish Yews of unusual size, evidently of great age, and several fine specimens of Pampas Grass (*Gynerium argenteum*), producing from 70 to 100 flower-stems 10 feet in height. We also observed several plants of the curious *Gunnera scabra*, producing flower racemes 18 inches long. The flower-garden, lawns, and croquet-ground adjoin the mansion, and extend in all to about 5 acres. These have been all remodelled within the last few years; the old grassy steps and slopes have been all done away with, and substantial and ornamental terrace-walls erected in their stead, varying from 12 to 18 feet in height. These walls are being speedily covered with the finest sorts of Roses and other choice climbing plants. The walls occupy three sides of the flower-garden proper, which consists of about two acres, and presents nearly a flat surface.

The principal promenade walk is about 300 feet in length, and 20 in breadth. All the other walks are 10 feet in breadth, edged with a neat fire-brick edging, made especially for the purpose. A border, 12 feet wide, runs along the terrace-wall; then the ground is divided into three equal divisions, in which are designed large geometrical figures, with scroll-work, in box-edging. These figures were principally designed by Lady Lindsay, in the designing of which much fine taste has been displayed. They are planted during summer with the most choice collection of bedding-plants, in the planting of which much care has been taken to have the colours well balanced, in order to produce perfect harmony and good effect. In the centre of the mid-division, there is a very neat ornamental fountain with a large basin; and between the terrace-stairs there is another fountain, in the basin of which is a large number of gold and

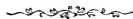
silver fish, which, from their appearance, seem to thrive very well. Roses are extensively cultivated here, being all arranged according to class and colour, and carefully and properly named, which is very essential in a horticultural point of view. Soil and situation seem admirably suited for the cultivation of the Rose, as they thrive amazingly. In connection with this flower-garden there is a large greenhouse for storing bedding-plants during winter, and a very commodious propagating-pit thoroughly heated with hot water, also for the propagation of bedding-plants. Then there is a very comfortable two-roomed house, built expressly for the accommodation of the two young men who have the charge of the flower-garden. Were such comfortable domiciles more common for young gardeners, one would hear less of the discomforts of the bothy system. In the completion of this beautiful flower-garden, it reflects the greatest credit on Mr Adamson for the very substantial and business-like manner in which everything has been finished, the making of which, I understand, cost over £4000. One grand feature connected with this place is its Standard Sweet Bays. Nearly one hundred of these have, within the last few years, been brought from Belgium. They are magnificent plants, having fine, clean, tall stems, and finely-formed bushy heads, and look the very picture of health. During the summer and autumn months these plants are arranged along the terrace-walks, and have a grand effect, and give the place much of an Oriental appearance. They are all growing in uniform wooden tubs, painted green, and when moved, are drawn on a lorry by a pony. Large and commodious wooden sheds have been erected for the purpose of sheltering those Bays during winter.

The croquet-ground is on the upper terrace to the eastward of the mansion, and is a large piece of ground, finely kept, having on its east end a clump of choice Rhododendrons, intermixed with Kilmarnock and other Weeping Willows, and rendered gay during autumn with Tritomas and late Phloxes. Parallel with the croquet-ground, and in order to screen the offices, a large and very handsome verandah has been lately erected, which has been covered with Roses and other climbing plants. The verandah has a span of 12 feet, and affords a spacious promenade within, being about 140 feet in length. To the east of this verandah stand the remains of a fine old family chapel, bearing the date of 1545. It is now roofless, and covered with Ivy to the balcony.

The common Yew seems to be much used here for the double purpose of forming hedges and affording shelter, and to produce effect. Those hedges are all planted in lines to correspond with the general character and arrangement of the whole. At a short distance east from the kept ground, stands Balcarres Craig, a huge mass of blue whinstone rock, and on its summit there is a lofty tower, forming a grand object in the landscape, and seen at a great distance. On going along the public road eastward, and almost immediately on leaving Colinsburgh, there is a very handsome porter's lodge and gateway just newly erected. This is a new approach to Balcarres, and it is about a mile in length, with fine easy curves quite in keeping with the surroundings. In connection with this new approach we observed a number of newly-planted clumps of choice trees and shrubs, the designing of which shows good arrangement, and in time the effect will be good.

JOHN DOWNIE.

WEST CATES, EDINBURGH.



ABOUT THE MANAGEMENT OF FORCING-HOUSES.

MUCH has been written in the pages of 'The Gardener' these two or three years about the Peach, a good deal of which has been rather conflicting: one recommends a night temperature not exceeding 45° to start with; and I have observed the writer of the Calendar recommends starting at 50° , and the same writer recommends syringing with water at a temperature of 80° . When I find rain falling in March at a temperature of 80° , I may be induced to adopt this practice. A third, the worthy Mr Simpson of Wortley, recommends the free use of the syringe when the trees are in bloom. Mr S. is somewhat given to startling ideas, and I must say I admire his progressive notions, although I have not observed anything new among them. All the above recommendations might be harmless under certain circumstances, while under other circumstances they might be hurtful, to say the least; and what might be pursued with safety in Mr Simpson's well-appointed structures, might involve considerable loss where Peaches are grown under difficulties. For instance, if some tyro of an evening in February acts on Mr Simpson's advice, syringes his Peach-blossom freely at shutting time, having no adequate command of heat, and two or three gloomy days follow in succession, with a raw hoary air outside, such as we experience here at the present moment, I need not ask any gardener who knows how to grow Peaches what the result would be to the blossom, while it might be no injury whatever to the trees. In the same manner, some varieties of Peaches might be started with impunity at a night temperature of 50° ; but if first-class Peaches are wanted, they will do better between 40° and 45° . When above the latter degree, I have always a little ventilation on, if the weather is such as to admit of it. I have something more to say about the Peach that may occupy another paper: meantime, with the worthy Editor's permission, I will proceed to draw attention to some more of what has been advanced of late. It appears, from an article by J. S. in your December number of 'The Gardener,' that our employers may congratulate themselves. According to the opinion of J. S., as far as the forcing of Muscat Vines and Peaches is concerned, we may haul out our boilers and pipes. What a blessing when iron is so high in price, and coals so difficult to obtain at any price! Young lads need not disturb themselves any longer waiting up of nights attending the fires, and masters may take matters easy, and then go to bed; no use for your nocturnal rounds to see how the stokers are doing their duty. Your Muscat-houses will do well if the temperature oscillates between 100° at mid-day, and 50° , or even 45° , at sunrise. This is what I call "gardening made easy,"

if it were not that it bears an absurdity on the face of it. I am not one of those who think the thermometer should not vary more than a degree or two in a night. Indeed, if the outside air is intensely cold, I think it is great folly to keep the heat up to a given point by excessive firing. But I may say here that Mr Shiels, late gardener to Lord Blantyre, allowed his young men only 2° to come and go upon. Some may think this sailing rather near the wind, but I can tell them that few gardeners have been more successful than Mr Shiels. I may say he had ripe Cherries for years in succession before there were any in Covent Garden; and other forced fruits were equally well done under his charge. But if the latter sailed near the wind, I fear J. S. is going to let his craft adrift altogether. A difference of 55° in six hours! If J. S. can point out a Vine-growing spot under the sun where the temperature varies as much in the 24 hours in ordinary circumstances, I will have no hesitation in supposing his system correct. The next proposition we may look for, will be to grow Vines on the open walls in Caithness-shire. Your correspondent says he has proved that Muscats will set like Peas in a temperature of 60°. I question this; but even though we allow this, we have often seen Muscats set that never stoned, and there is a vast difference between 60° and 45°. A dewing with the syringe might be a nice thing for them at the latter figure. Now, we believe success depends on assisting nature, not in departing from natural laws. We most unhesitatingly approve of a low night temperature for Peaches; but Vines are quite a different thing. The Peach flowers, sets, and stones on the open wall when the night temperature is all but freezing. What would the Vines do under the same circumstances? Nothing but remain dormant; and when they do begin to move, they will require about ten weeks growing under ordinary circumstances before they flower. Hence, when our Vines are fairly started, we believe in the scale of temperature recommended since ever we saw a Vine, and still recommended by that most eminent of growers (in his 'Treatise on the Vine'), our Editor's brother, of the now deservedly-famed Tweed Vineyard; and, notwithstanding all this, our leaves and shoots present the very picture J. S. describes as existing in a house without fire-heat in the morning—namely, the leaves are laden with globules of water, and the shoots bursting with vigour, and dotted over thickly with gelatinous superabundant sap. Moreover, we never have such a symptom as untimely withering of the foliage. We rather pride ourselves in maintaining our foliage until it turns a beautiful pale yellow—beautiful because it speaks of finished eyes and well-ripened wood. I may add here (for the benefit of those who may not possess the means of obtaining the information), on the authority of the late

Mr Thompson, of Chiswick, who went very carefully into this subject, and took his data from nature as much as from science, that the mean temperature of Beyrout, Cadiz, and Catania (while Vines are in flower), is respectively 69° , 63° , and 71° . At the latter place, the Muscat of Alexandria attains a high degree of perfection in the open air under the name of Zebibo. This speaks volumes.

Your correspondent J. S. is inclined to think that many of the pests that infest forcing structures are traceable to fire-heat; spider and thrip he especially points out. I beg to ask him what we are to blame for those plots of Gooseberries in the open gardens that are frequently to be seen denuded of their leaves with red-spider? I have no hesitation in saying that if the proper atmosphere is maintained in a forcing-house, such pests will not give much trouble. I meant to have described an effectual mode of destroying spider in vineries, but perhaps, as I have drawn this out sufficiently long, I may, with the Editor's permission, make it the subject of another paper. This paper has been written with no other object than the arraying of facts against such chimerical ideas as those advanced by J. S., and suchlike; and I am just as ready to return to the subject as J. S. is, and give him facts for a lifetime, if I think it worth my while.

D. J.

BROUGHTY FERRY.



A PLEA FOR LARGE-FLOWERED AND FANCY PELARGONIUMS.

IT must be evident to any person that takes an interest in the large-flowering and fancy sections of the Pelargonium, and can remember fifteen or sixteen years ago, that these plants are not so highly appreciated by the majority of gardeners at present as they were at that time. In confirmation of this, it is only necessary to notice in how few places they are to be met with nowadays in a condition creditable to the cultivators, and also how seldom they are alluded to in the horticultural journals of the day; whilst scarcely a month passes without a paper appearing in praise of some variety or section in the scarlet division of the Pelargonium. The great improvement that hybridisers have of late years effected in the latter division, furnishes one reason why the large-flowering and fancy sections are less esteemed at present than they formerly were. The advent of Mrs Pollock and Sunset so surprised the horticultural world that gardeners were suddenly taken with a tricolour mania, which, on the appearance of Beauties of Calderdale and Ribblesdale, assumed the Golden Bronze

type, and, with intermittent attacks of a decided zonate form, has continued up to the present time.

My readers must not infer that I am no lover of the scarlet division. On the contrary, I appreciate the beauty presented in the foliage and flowers of its several sections, and admit their usefulness and adaptability to the embellishment of the greenhouse or flower-garden; but I cannot agree with those whose enthusiasm in their culture leads to the total exclusion of the large-flowering and fancy varieties from a share in the adornment of either department. In fact, I have no hesitation in saying that the neglect with which the latter sections have of late been treated is a mistake on the part of professional gardeners and amateurs; and I would fain hope that the time is not far distant when they will again receive the attention which their decorative qualities deserve.

As a means of bringing them into more favourable notice with the public in general, I beg to suggest the propriety of Horticultural Societies offering better prizes for collections of them at the summer shows than have been offered in recent years.

If we except the Azalea, no class of plants make a more striking display on the exhibition-table than a well-bloomed collection of large-flowered Pelargoniums. Then the unassuming chasteness and refined delicacy of colouring as presented in the flowers of the fancies, combined with dwarf symmetrical growth, profuse and continuously flowering habit, entitle them to a high place in the favour of all lovers of flowers.

Yet, notwithstanding the above commendatory qualifications, we must admit that fancies have not been "fashionable plants" for a number of years; and, what is strange, their unfashionableness cannot be attributed to any fancy on the part of the ladies—and in most cases they take the lead in such matters—as I have never known a lady on seeing a well-grown specimen of this section, who did not admire it.

I have heard it urged as a reason for the neglect of large-flowering and fancy Pelargoniums that little improvement has taken place amongst them of late years. I admit their strides have not been so rapid as in other sections; still I venture to think that the pace has been equal to the encouragement given to those parties who make the raising of new varieties of these plants a speciality; and although improvement is not so apparent in them as amongst the scarlets, yet substantial progress has recently taken place in the form and substance of the flowers of both sections, to which, in the case of the fancies, may be added a more robust constitution of the plants.

I have also heard put forward, as a reason for their partial neglect,

that they are more difficult to manage than tricolours or zonals. Now, with the exception that they are more subject to attacks of green-fly, in no other way is their culture more difficult. If kept free from these pests, their treatment in other respects is quite as simple, and they will grow into specimen plants in a shorter time than the majority of tricolours or zonals.

I will now add a few cultural notes in reference to growing specimen plants: possibly there is some reader of 'The Gardener' to whom such may be of use. If not already in possession of a stock, the present month is a good time to procure one from the nursery. The following eighteen varieties of large-flowering Pelargoniums, if properly grown, cannot fail to please the cultivator.

The first six are of Mr Foster's raising, the remainder are Mr Hoyle's. Achievement, a distinct light variety, with fine-formed flowers. Pompey, a grand variety, with well-formed flowers; colour maroon and orange. Black Prince, free bloomer and good habit. Charlemagne, large flowers of fine form and quality. Empress, a good sort. Maid of Honour, a grand variety; should be in every collection. Beacon, a free bloomer, prevailing colour crimson; extra good sort. Claribel, pure white, with small spot on top petals; a very pleasing flower. Congress, a free-blooming sort, with fine-formed flowers. Example, a good grower and neat habit, free. Exhibition, good habit, large trusser. Heirloom, flowers of great substance, plant a good grower. Charles Turner, a grand flower of fine shape, prevailing colour orange-scarlet. Royal Albert, a first-class flower, and robust grower. Progress, a good old sort, of fine form and substance. The High Admiral, a smooth flower of good form. Woman in White, a free-flowering white variety, excellent habit. Zephyr, a dark-coloured sort, flowers of fine form and substance.

Florists are indebted to Mr Charles Turner as the raiser of the following 12 fancy varieties. I will not occupy space with a description of each variety, but they are all beautiful and distinct sorts: Acme, Bridesmaid, Brightness, East Lynn, Ellen Beck, Excelsior, Fanny Gair, Lady D. Neville, Mrs Darling, Princess Teck, Silver Mantle, Undine.

If the plants have come from a distance, they should on arrival be placed for a few days in a rather close, moist structure, and shaded from bright sunshine. Here they will soon recover the bad effects of the close packing and long journey. Their treatment after must be similar to that described further on for plants propagated on the premises.

The most usual method of increasing the Pelargonium is by cuttings, July and August being the time generally chosen to propagate the principal stock. But if large plants in the shortest possible time be

the object in view, the end of February or beginning of March is the best time to put in the cuttings. They will root with equal success in a common hotbed or in a propagating-house. The latter, however, is "a real convenience;" and every place where there is any considerable number of plants to propagate, should be provided with a suitable structure for the purpose.

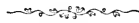
Having decided upon the varieties to be increased, choose for cuttings the top 3 inches of healthy short-jointed shoots. With a sharp knife sever them from the parent-plants; trim off one or two of the lowest leaves, cut off smoothly the bottom of the cuttings just beneath the lowest bud, and they are ready for inserting into the cutting-pots. Let the pots be clean both inside and out. Each cutting must have a separate pot. The size known as 60's will answer very well. Drain efficiently with pounded potsherds or wood-charcoal. Use a compost consisting of three parts leaf-mould or peat, and one part clean river or silver sand, well mixed together. Press the compost firmly into the pots, and with a stick for the purpose make in the centre of each a hole, into which drop a pinch of sand for the base of the cuttings to rest on. Then insert the cuttings, and give sufficient water to moisten and firm the soil around them. This done, plunge them in the propagating-bed, where they must not be allowed to suffer through want of water. Care, however, must be taken not to over-water, as in the close atmosphere of a propagating structure they will require very little until roots have been formed. Shading from bright sunshine may be necessary; but unless the cuttings are in danger of flagging, the less shade they are subjected to the better. If the bottom-heat is steady at about 70° , roots will be formed in about a fortnight. Some varieties emit roots quicker than others, but under suitable conditions all will have rooted in three weeks from the time they were put in as cuttings. As soon as it is known that all are rooted, raise the pots out of the plunging material. Have at hand a square wooden box filled with some light material, such as chopped moss, into which replunge the pots. Transfer the box and its contents to a place as near the glass as possible, and where the plants will have the benefit of as much air as it may be deemed right to admit to the propagating structure, of whatever kind it may be. With due attention to watering, let them remain here until the little pots are pretty full of roots, which will be in about five weeks from the time the cuttings were inserted. Keep a sharp look-out for green-fly; on the slightest indication of their presence, fumigate the plants. If not desirable to fumigate the structure in which they are, remove them to a shed and cover with a handglass, into which introduce a few puffs of tobacco-smoke, which will soon destroy the enemy.

Prepare the following composts, and get them under cover in a warm

corner if possible, so that they may be in readiness when repotting time comes. For the large-flowered kinds three parts fibry loam and one part old cow-manure, with a dash of ground-bones and coarse sand. For the fancy varieties, equal parts fibry loam and leaf-mould, with sufficient sand and ground bones to keep the mass porous. These composts will suit at all future repottings. Their subsequent management will be given next month.

J. HAMMOND.

BRAYTON.



MADRESFIELD COURT GRAPE.

IN reply to Mr Cramb, p. 39, for January, I may state that it was respecting the dry spot on Grapes when undergoing the stoning process, that I advocated less water to be given, which I still hold to be good advice. As to the gangrene that Mr Cramb talks of as having injured his Grapes, never having seen it, of course I know nothing of its effects.

Mr Cramb need have no misgivings of himself, as I never had any idea of attributing unworthy motives to him regarding the Madresfield Grape. I believe what he says in describing how the Grape behaved with him. All I contend for is that it has succeeded well with others.

As Mr Cramb wants facts, I request him to turn to page 275 of 'The Gardener' for June 1871. He will there see an account written by Mr Temple regarding the Madresfield Court and Golden Champion Grapes as grown at Pitcarlie. Mr Temple states that the bunches when ripe would weigh from 4 lb. to 6 lb. each. This is more than the belauded Grapes grown at Cyrfartha. Mr Cramb will also see what I consider a true description of the Grape at page 411 for September 1871.

Another fact is that Mr Barron of Chiswick grows the Madresfield Grape very successfully in a cold house. I do not, however, think that the proper place for it. A writer in the 'Chronicle' last year, in giving an account of Chiswick, stated that he was amazed on entering the house where the Madresfield Grape was grown to see such a crop.

Now, as the Madresfield Court Grape has been grown in great perfection in England, Ireland, and Scotland, I think I may be permitted to anticipate that it may still be so grown.

The Muscat Hamburg, when it first came out, met with much opposition, as Mr Cramb knows. I remember seeing it shown in Oxfordshire grown on its own roots, in beautiful condition, weighing 4 lb. a bunch. I have also seen it do very badly. Grafted on the Black Hamburg it does well. Some stock may yet be found to suit the Madresfield Court, and probably prevent failures.

At page 39 for January, Mr Hunter gives an account of his failure with the Madresfield Court. I merely allude to this, as Mr Hunter states that he watered his Vines sparingly, on purpose to ripen the wood. I consider that bad advice. Vines require more water than many imagine. Last year we had nearly 60 inches of rain. Vines growing in an outside border of course had it all. Well, I can measure canes 3 inches round, ripened as hard, comparatively, as oak. Out of fifty Vines I had not one red-spider that I could see. Leaves measuring 16 inches by 14 inches. Peaches in pots grown in the Vine-houses, ripened in May.

W. HUTCHISON.

LLWYNDU COURT.

RECOMMENDING NEW FRUITS.

It is in no spirit of carping criticism that these remarks are penned ; nor are they specially brought to mind by the discussion of the properties of Madresfield Court Muscat Grape in your columns the last two or three months, but have been thought about for some time. My principal object is to attempt, though humbly, to impress on the minds of our most representative men the responsibility they incur in recommending the public to purchase the different new fruits brought out from time to time before they have had really sound experience as to their being improvements on existing varieties or not. I notice that Mr Cramb has on two or three occasions of late, both in your columns and in those of a contemporary, used the influence his name gives in condemning the above-named Grape. Whereas, in the 'Gardener' for November 1869, in describing the gardens at Madresfield, he uses that same influence in bringing before the readers of the 'Gardener' the good properties of this Grape. I am not practically in a position to say which of the two opinions is correct, as, though I have on several occasions seen the Grape growing, I have not myself grown it. Still I cannot but feel that before men of such standing in the Horticultural world as Mr Cramb speak in laudatory tones of any new fruit, they should either have had practical experience with the subject, or have seen it growing under different conditions. It is far from my object to in any way depreciate the skill and ability of the raisers of our new fruits generally (personally, I rejoice in their number); but as many gardeners are led to recommend their employers to purchase the different new fruits brought out on the strength of some well-known name, I think it would prevent many disappointments to all concerned if our "leaders" in these matters were to exercise a little more discretion in their recommendations. Moreover, those who are the fortunate possessors of any really good thing would lose nothing by the delay in allowing their good properties to be brought to proof ; and the extra vigour gained in the time would insure their being in a position to supply more vigorous plants when brought out, instead, as is often the case, the constitution of an otherwise good thing being damaged for some time, by the quick way they are propagated and got up for sale. I could quote other instances besides Mr Cramb's where men of influence in the gardening world have written in glowing tones of a new fruit, and then in a year or two's time have condemned it.

January 6, 1873.

H. C. G.

Calendar.

KITCHEN-GARDEN.

PREPARATION for seed-sowing now requires prompt attention. If weather should be changeable, the important operation of getting in the crops may have to be done piecemeal, but on no account should seeds be sown in sodden unworkable soil. Better to wait than have the seed destroyed and the ground injured, which is sure to be the case if it is trodden down when wet. We have, however, more than once, on heavy soils, been obliged to get in seeds by using boards for standing on, and dusting old potting-bench soil into the drills: a large stock of this on hand is more valuable in the early part of the season than is generally believed. It can be got ready by sifting it when weather is wet, &c. A full crop of Peas may now be sown; a second early kind for a succession, such as Dickson's Favourite, suits well at present. Two or three sowings in moderate quantities during the month will keep up continuous supplies. Those which were sown in boxes, &c., may be planted out when weather will permit. A quantity of leaf-mould placed with the roots as planting goes on will do much to give them a start. Planting thickly, especially on good ground, is a great evil: stake them at once, which will act as protection. Spinach, early Turnips, Radishes, &c., may be sown between the rows. Broad Beans may be treated the same as Peas, planting them 2½ feet, or more, apart. Mazagan is one of the earliest. Sow in rows 9 inches to 1 foot apart, Parsley, Radishes, Early Horn Carrots, Cauliflower, Lettuce of sorts, Cabbages, Brussels Sprouts, Scotch Kale, Savoy, Broccoli: for an early lot, Walcheren, Snow's, Grange's Autumn, and some others; but the main sowings may be left till April. The demand and means of growing the quantity of these vegetables can alone regulate the quantity to be sown. Sow Leeks in a bed for transplanting, also on a space where they may be thinned out and a crop left. Deep drills drawn and the seed sown in them, but slightly covered, answer well, and the Leeks can be earthed up as they require it; this crop can scarcely be injured by supplies of rotten manure. Parsnips and Onions

should be sown, if not already done; Onions should be trodden or well rolled down. Look after birds and other vermin after seeds are sown; protection with nets may be necessary. Keep up supplies of small salad by sowing frequently; Golden and American Land Cress should not be forgotten. Radishes may be covered with litter, exposing them to the sun, and protecting them from frost as may be necessary; but frames for these and other early crops save much labour. Hardy herbs which may require renewing, may be sown under glass, grown on and planted out when fit; but many kinds do well when sown on a border in April and thinned. The herb ground should be looked over, and stock taken of the quantities, as in some localities many sorts die off more or less every year. Mint and similar kinds do well when divided and planted into well-manured and deeply-dug soil. Prepare ground for Asparagus, by deeply trenching and heavily manuring it; a quantity of sand and sea-weed is advantageous for mixing with the soil. The finest Asparagus we ever saw was from beds twenty years old, and the preparation was the filling in of a ditch with all manner of garden refuse. Plant Cabbage in quantity. Red Cabbage should be planted according to what is wanted for pickling. Large heads are not the best for pickling; we never had more useful pickling Cabbage than from what were sown early in March. Plant Potatoes from 2 to 3 feet apart, in rows, according to the strength of tops and richness of ground. Close planting is very injurious, and we think helps the ravages of disease by excluding light and air. Plant Jerusalem Artichokes: single rows, by sides of other crops, give the finest tubers; close planting with them is also a great evil. Plant out Lettuce from beds which have stood through the winter; if sheltered by rows of Peas or Evergreens stuck in, they will be much safer. Look after slugs, and use lime or small ashes dusted about to keep them in check. Seakale may now be planted, the trimmings cut up into pieces a few inches long, and placed in rich ground: 2 feet between the rows, and 1 foot between the plants,

will be enough. Rhubarb may be planted in rich ground, well trenched. Keep the crowns from frost, if they have been under protection before being planted. Rhubarb may be blanched, if necessary, by placing boxes or deep pots over the crowns. Cauliflower in pots should be planted out before the roots become pot-bound; protect with branches, earth up those under hand-lights: a layer of litter or old Mushroom dung placed over the roots will do much to protect them and keep out drought. Sow Basil, Sweet Marjoram,

Tomatoes, Celery, and Ice Plant, in heat. Pot Tomatoes which were sown last month. Plant French Beans for succession as demand requires. Capsicums may be sown, and earlier sowings potted on, giving light, heat, and a little air when it is safe to open the lights. Every part of the Kitchen-Garden should have an orderly appearance at this season of the year, and all crops should have the hoe or prong freely used among them.

M. T.

FORCING DEPARTMENT.

Pines.—If the suckers most in need of shifting have not been shifted in the course of last month, no time should now be lost in attending to them. Do not force these into rapid growth until it can be done with less fire-heat and more light, otherwise they will produce attenuated weakly leaves which no after-treatment can thoroughly rectify. Do not let the bottom-heat exceed 85°, nor the night temperature be higher than 60° when the weather is cold, and 65° when mild. Under this treatment they will, for the present, make slow but compact sturdy growth, and will be taking to the fresh soil, and be in a fit state to push on as the season advances. Let them be aired more or less daily, according to the state of the weather, and on sunny days shut them up early, so that the heat can be maintained with a minimum of fire-heat. See to late autumn and midwinter potted suckers, and if they are dry, give them as much water as will thoroughly moisten the ball. By the end of the month soil and pots should be got ready for shifting these early in April. In cases where any of them have been subject to drip the last very wet winter, let them be singled out at once, and all the soil shaken from them, and potted into the same sized pot, using turfy rather light loam to encourage them to make fresh roots, and be ready to shift along with the others. The temperature for these may now be increased 5°—to 65°—on mild nights. Any portion of the winter fruiting stock that may have been wintered in 8-inch pots should now be examined, and if well rooted, shifted into their fruiting-pots. Where it is an object to have a supply

of ripe fruit by the end of May, the earliest Queens should be bloomed off by this time, and can be pushed forward with increased heat and moisture, especially on bright days when sun-heat can be husbanded. Sprinkle the paths morning and afternoon when the weather is bright, and the plants can have a very light dewing overhead on the afternoons of sunny days when the house or pit is shut up, when the heat may run to 85° for a time, allowing it to fall to 70° at night. The bottom-heat should range from 85° to 90°; and where the heat is derived from hot-air chambers, be careful, now that the plants are all in fruit and excited into growth, that the soil does not become too dry. When water is required, colour it with guano, or give them sheep or deer manure water. The succession fruiting Queens intended to succeed those now started, may now be excited with a few degrees more heat and more moisture at the root and in the air, and if all is right, they should start by the end of this or beginning of next month. Late autumn started fruit will begin to colour by the end of the month. Give them more air, and keep them drier when colouring commences. Smooth Cayennes, and other late sorts intended for autumn fruiting, should still be kept quiet. Only they must not, now that the sun has more power, and more air is required, be allowed to be very dry at the root. Just keep them steadily on the move to prevent anything like a stunted condition.

Vines.—Now is a good time to start Muscat and other late varieties requiring high temperature to ripen them to perfection, and fit them for keeping

well through the winter. This especially applies to localities which are cold, and the seasons short. If there is a portion of the latest Grapes still hanging on the Vines, they may now be cut and bottled, or put in wadding in tin boxes, and kept in a cool dry room. This will allow of the Vines being pruned and the house thoroughly cleansed. All cuts made in pruning should now be dressed twice over with styptic the day after the pruning, to prevent any chance of their bleeding. Where the earliest crop of fruit is from pot-Vines, pay great attention to the matter of watering, and feed them with manure-water up to the commencement of the colouring process, after which give clear soft water only; gradually withdraw moisture from the air as the colouring process goes on, and give a more liberal supply of air on fine days, leaving a little on all night. Inspect the foliage minutely, and if there is any red-spider, sponge it off at once, or with a drier atmosphere it will increase and work mischief. Succession-houses now stoning, and that are intended to succeed those in pots, had better not be forced hard till they take their second swelling, when, if necessary, to bring them on in succession they may be pushed along, especially on fine days. The night temperature may range to 70°, unless when the weather is cold. Take every advantage of sun to raise the heat on bright afternoons to 80° or 85° for a time, with a corresponding amount of atmospheric moisture. When the morning gives evidence of bright weather, keep the fires low and let the sun do the work. Hot pipes and a bright sun with a full flood of air, are a combination of circumstances by all means to be avoided. If the roots of these Vines are chiefly in inside borders, see that they do not become over-dry, especially near the pipes, where it is better to mulch them than to be too frequently applying water. Thin bunches and berries in succession-houses as soon as it can be seen which are the most desirable to leave; the compact bunches always to be preferred to the long and loose. Stop progressing Vines as soon as they extend to two leaves beyond the last bunch; and in the case of Hamburgs and all certain setting varieties, thin off all but one bunch to a shoot. Do

not be in a hurry to tie down the growths to the wires. To prevent injury from their coming in contact with the glass, partially tie them down and allow them to stiffen before finally tying them down, as strong Vines especially are very apt to break off at the junction of the young wood with the old. The end of the month is a good time to plant young Vines that were raised from eyes last season. Shake them entirely out of the soil; well wash their roots and spread them regularly out in planting; and when planted, water with tepid water, fix them to the wires, and allow them to break into growth in a low temperature.

Peaches.—If the trees in late houses have not been pruned, let the operation be completed without delay. Where trees are under unheated glass, give plenty of air to keep the trees as backward as possible, for if pushed on now they may suffer much from late frosts. Until the fruit have stoned and begun to swell a second time in early houses, do not raise the night temperature in very cold nights above 55°, and 60° degrees when mild. When they have begun to swell, again increase the heat 5°, with 10° or 15° more with sun after shutting up on bright days. Give air early by degrees, and shut up early. Syringe freely all trees not in bloom at shutting-up time. The Peach is a moisture-loving plant, and a dry atmosphere it much dislikes. If the crop of fruit exceed more than one fruit to every square foot on aged trees that are not growing grossly, thin off all superfluous fruit immediately the stoning process is completed. Young trees may be allowed a heavier crop. Keep a watchful eye on the inside border, and do not let the soil become dry. A good plan is to mulch with rotten manure after a good watering. Where the fruit are set very thickly on succession-trees, thin them partially when the size of Marrow Peas. Where they are in clusters reduce them to one, always leaving the largest. Disbud superfluous growths by degrees also, always leaving a good bud at the base of each fruit-bearing shoot, and thinning them partially along the whole shoots, completing the operation at three intervals of eight or ten days. Wherever green-fly appears, fumigate with tobacco-smoke.

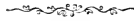
Figs.—Increase the heat in houses started last month to 60° at night; and if, as is often the case, the second crop is of more importance than the first, do not let the first crop be too heavy, more especially on trees in pots. Water must be regularly supplied to those in pots, as they expand their foliage and swell their fruit. Keep the air moist by sprinkling the paths, and syringe the trees freely on the afternoons of fine days. Pinch the fruits out of the young-shoots at the fourth or fifth joint. Do not allow more young growths and foliage than is just sufficient to furnish the trees without crowding them. Old trees that have well filled inside borders with their roots, require to be liberally supplied with manure-water.

Melons.—Those planted out last month will be growing freely. Water moderately at the root, and mould them up by degrees, applying a few inches of soil as the roots appear at the sides of the ridges. Let those that are trained near the glass in Melon-houses grow to within a foot of the top of the house before stopping them. Let the air moisture be moderate until they show fruit on their lateral growths. Give more or less air daily, and keep the night temperature at 70°. Plant

out those sown last month in stronger soil than is desirable for very early crops. Sow for succession-crops at the beginning and end of the month.

Cucumbers.—Look over free-growing plants every two or three days and stop them at every joint. Remove all deformed fruit, and do not let them bear too many at a time. After a season of dull weather, shade slightly for a time in the middle of the day. Range the night temperature about 70°, and shut up with 15° more from sun-heat in the afternoon. Water those in full bearing with manure-water, and top-dress with fresh loam and horse-droppings.

Strawberries in pots.—Thin off all abortive blooms and small deformed fruits on those swelling their fruit. Let them have a night temperature of 65°. Syringe twice or thrice weekly on fine days, and give air freely in the early part of the day. When they are in bloom, range the temperature from 55° to 60°, and give air more or less every day, but avoid exposing them to currents of frosty air. Put more plants into heat every ten or fourteen days, according to stock and space. See that in all stages they are not allowed to become over-dry at the root.



Notices to Correspondents.

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in the 'Gardener' to David Thomson, Drumlanrig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to, be forwarded by the middle of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

We have to thank several friends for their communications duly received, and regret that want of space compels us to postpone their publication till next month.

C. S.—The creepers to which you refer, especially the Mandevillea, will bring red-spider on your Vines. Camellias may be grown on the back wall of your

greenhouse, and will do well: and they will bloom on the north aspect of your stables; they bloom well on such an aspect in Scotland. Possibly the *Mandevillea* will do on a wall in your climate. It is worth a trial.

G. W. S. Clericus.—The hour at which your vinery fire is made up for the night is quite correct. As to whether it should be made up again to any extent in the morning depends entirely on the state of the weather. To have hot pipes when the temperature can be kept up without such, is most undesirable. Generally speaking, you cannot depend on a fire made up at 4 or 6 P.M. lasting with sufficient power till 6 A.M. The true method of diminishing the amount of fire-heat is to shut up your vinery early with sun-heat, starting the fires in time to prevent the temperature from falling below the minimum at 10 or 11 P.M. A little air left on all night is beneficial, especially as the season becomes more warm.

J. C.—An *Acacia* of some sort, but we cannot name it from the morsel sent.

J. P.—The person to whom you refer is, we believe, perfectly trustworthy in reference to your want.

D. M'C.—Unheated glass walls may suit your purpose. But we recommend all such structures to have means of protecting against late spring frosts in such a locality as yours, for the crops are sometimes destroyed in unheated ones.

CAM.—We cannot undertake to name Mosses. There is an illustrated work on Cryptogams by Mr R. Stark.

WINIFRED.—We certainly should not think of setting up a model of a flower-garden for a floral device, although the terms device and design are of the widest application, and may refer to either a flower-garden design, or that of an edifice. Surely schedule-framers can have no difficulty in wording them so as to prevent such confusion of ideas.

CLEMATIS *JACKMANII* PERFECTLY HARDY IN THE NORTH.—In reply to your correspondent Miss Hope, I may say that while travelling in the vicinity of Castle Menzies, about three miles north of Aberfeldy, in Perthshire, in August of 1870, I was struck by seeing *C. Jackmanii* completely covering (what appeared from the public road to be) a wire arch in the middle of an open garden without any protection from any side, and the profusion of its blooms was beyond anything I have ever seen. I would not have been half so much surprised to have seen it at Wardie Lodge.

D. IRVINE.

BROUGHTY FERRY.

THE DESTRUCTION OF ANTS.—In the last month's issue of the 'Gardener' a correspondent wished to know the most effectual means of destroying ants. Though I will not say that what I am going to recommend is the most effectual means, I will say that it is certain death to all of them it comes in contact with. Those who have not been pestered with this most inveterate delinquent have great reason to be thankful; for among all the living pests that a gardener has to contend with, this, I think, is the most troublesome of them all.

This is my plan. My hot-water pipes are much the same as a correspondent describes his. Near their principal haunts I lay down a little half-putrefied raw meat minced small daily. The ants soon gather to the feast in myriads;

then perhaps every second day, about 11 A.M., I let the temperature of the house or houses increase as far as I can with safety for an hour, which brings them out in increased numbers ; then I take two or three pans of boiling water and give them a warm bath, and that lot never troubled me again ; and this I did from day to day till I got rid of them. This plan, perseveringly carried out, I am certain will enable your correspondent to get rid of his ants.

PETER CATER.

JARDINIER.—When you comply with our rule by sending your name and address, we will reply to you. Allow us here to protest against sending specimens of *diseased* Vine-roots up and down the country. There is little use in trying to get disease and pests stamped out in the face of such a practice, and we hope all concerned will be considerate and cautious in this matter.

S. R.—The fine Clematis Jackmanii at Merton House, noticed in the 'Gardener' for December, had 1300 fully-expanded blooms upon it—not 300, as stated.

R. RHODES, MORPETH.—To grow your Hollyhocks well, trench the ground just before planting, adding a good portion of well-decomposed manure. "War Eagle" is the blackest Hollyhock known. It takes good growing to make it showable. The following 12 are really fine, and will answer your purpose well: Charles Eyre, Countess of Craven, John Gair, Brilliant, Ida, Ruby Queen, James Whitton, Queen of Yellows, Mrs P. Bruce, William Craven, Octoroon, R. G. Ross.

R. PENDER.—"Warrior" is a very fine double Fuchsia ; "Inimitabilis" and "Noblesse" are first-rate single varieties. Viola Perfection, Lutea Major, Lutea de Massiffs, and Perpetual Yellow, are the best for general purposes.



THE
GARDENER.

APRIL 1873.



THE CULTURE OF PITCHER-PLANTS.

(NEPENTHES.)



HERE are few plants which interest ordinary observers more than these, when well grown ; and like Orchids among flowering plants, they, when bearing well-developed pitchers, give a superior tone to the collection of foliage plants with which they may be associated.

Some of the new or rare kinds are rather expensive, but small plants of many good kinds may be obtained at a moderate price, and will not fail to interest both cultivators and visitors. There has been a good deal of misunderstanding with regard to the foliaceous organs of *Nepenthes* and their remarkable pitcher-like terminations ; but it is now generally acknowledged that the ascidia or pitchers are merely appendages developed from a gland which terminates the prolonged nudrile of the true leaves, and not a modification of the petioles with the true leaf for the lid, as was formerly supposed. The flowers are borne on erect spikes, and are generally of a chocolate colour, not very showy. The male and female flowers are borne on separate spikes ; and as it rarely happens that male and female flowers are produced at the same time, unless it be in large collections, it follows that they are not so frequently hybridised as they otherwise would be. This is a difficulty often experienced by the hybridiser, not only in this but in many other classes of plants bearing dioecious flowers ; but many kinds of pollen will retain its fertilising power for months after the flowers are produced, if it be carefully collected when matured and wrapped up in tinfoil. I have frequently preserved pollen for a long time

by collecting it when dry and placing it in short lengths of common glass tubing. After a sufficient quantity has been introduced into the tube, the ends may be hermetically closed by having a flame from a candle or gas-jet blown steadily on them, after which they can be duly labelled and laid by until wanted. These tubes must not be broken too short, or the pollen might be neutralised by the heat from the jet.

Nepenthes are very easily propagated from cuttings taken off when the plants are in full growth. These may be taken from the sides when borne in that way, or the tops of tall plants may be taken off with three or four leaves each, and inserted in a layer of fresh living sphagnum. A close case, with bottom-heat ranging from 60° to 90°, is most favourable to the emission of their exceedingly delicate, black, hair-like roots.

Nepenthes will also root freely during summer if the cuttings are inserted in clean-washed gravel or Derbyshire spar. When the cuttings are well rooted, they must be carefully removed from the moss or spar, and placed in either pots or baskets, the latter being preferable in most cases for small plants. These plants require a sweet and very open or porous compost, with ample drainage; for although they are partial to an abundant supply of water at the root, when in a well-established and growing condition, still the least approach to anything like stagnant moisture is extremely injurious to them, and will soon ruin the most promising specimen. A good compost for these plants, and one which I have found by experience to answer its purpose admirably, is composed of fibrous peat, the smaller portions being removed, and one-third of fresh chopped sphagnum added. To this add coarse white sand, and a little leaf-mould. After the plant is placed in the basket or pan, a layer of living sphagnum may be added, and will greatly improve the appearance of the plant. I find that the roots of *Nepenthes* ramify very freely in living sphagnum moss, just as those of *Orchids* do under similar circumstances. A few well-grown plants add greatly to the appearance of an ordinary plant, stove, or East Indian house, and the temperature and humidity of the latter are just the conditions required for their development. The plants must be shaded from bright sunshine, more particularly until they are thoroughly established, after which they may be gradually inured to more sunlight, by which treatment the colouring of the pitchers is most beautifully brought out. The amount of shading requisite depends mainly on the aspect of the house in which they are grown. If the house is a lean-to, and has a northern aspect, a minimum quantity will be required; while, if it faces the south, the glare during the middle of the day will often be intense, and more shading will be required in consequence.

Fine specimens of different species of *Nepenthes* are grown at Chatsworth, trained up the front of the Amherstia house. These are but moderately shaded, and bear fine highly-coloured pitchers in abundance. During a visit I paid to that princely establishment two years ago, I found Mr Speed had dozens of cuttings that had been struck in the spar and gravel with which the side benches of that interesting house, devoted mainly to the *Amherstia nobilis*, are covered. In one of the Orchid-houses was one of the finest-grown specimens of *N. Hookerii* ever seen, a perfect picture of luxuriant health and sturdy vigour. This plant was as elegant as a well-grown *Dracœna Cooperii*, and its fresh green leaves were each terminated by a large heavily-blotched pitcher, reminding one of some strangely fantastic tropical fruit.

Several interesting hybrid *Nepenthes* have been raised from seed by Messrs James Veitch & Sons of Chelsea, who possess one of the most magnificent collections of these plants to be found in this country; and it is a rich treat to walk through their *Nepenthes* house and inspect the fantastic urn-like appendages that droop in such rich profusion both overhead and on all sides. The seeds of *Nepenthes* remind one of dry old larch-leaves in shape and colour, and are produced in immense quantities in the jungles of Borneo, Sumatra, and other islands of the Indian Archipelago, where these plants mostly luxuriate in the jungles, forming in some places a dense thicket or mass of undergrowth. Several very remarkable species, which have been fully described and beautifully illustrated by Dr J. D. Hooker, C.B., from dried specimens preserved at Kew, still remain to be introduced to our collections by some enthusiastic and enterprising traveller in Borneo. These include *N. Rajah*, *N. Edwardsiana*, and *N. Lowii*, the former bearing pitchers quite a foot long, and fully six inches in diameter. This species is spoken of by travellers as bearing pitchers capable of holding several pints of water.

Another interesting feature connected with *Nepenthes*, and indeed with both American (*Sarracenia*) and Californian (*Darlingtonia*) pitcher-plants, is the propensity for attracting flies into the urn-like appendages, from which they rarely escape. If old dead pitchers are examined either at home or abroad, they are generally found to contain dead flies, and occasionally other insects. Some writers affirm that the flies are dissolved in the glutinous liquid distilled by the pitchers when young, and that they are thus absorbed and enter into the economy of the plant; but this requires further investigation, since no distinct facts have been noted to prove this assertion. The slightly glutinous water contained in the younger pitchers is perfectly wholesome previous to its becoming polluted by the insects, which invariably accumulate and putrefy therein soon after the lid of the pitcher opens.

In the following papers we shall give a descriptive list of most species of *Nepenthes* at present cultivated in our gardens, as well as hints on the culture of *Sarracenia*, *Darlingtonia*, and *Cephalotus*, also commonly known in gardens as "Pitcher-Plants," though essentially distinct from the true Pitcher-Plants, or *Nepenthes*. F. W. B.

TEMPERATURE OF FORCING-HOUSES.

IN the December number of the 'Gardener' I made a few remarks on this subject. They were principally put forward in the form of queries, and in a way (I thought) so as not to hurt the prejudices of any one, knowing that a wide difference of opinion existed on the matter. The subject was, however, interesting and important at a time when the price of coal had reached a figure which is already seriously impeding the progress of horticulture. It appears, however, that there are always some people who, like the Irishman, are spreading out their coat-tails to be trodden upon, and amongst this class is clearly to be reckoned your Broughty-Ferry correspondent, "D. J." His remarks, which he calls an array of facts (!), are likely to have but scant consideration, placed as they are in uncomfortable juxtaposition to your own excellent leader on the same subject; and his situation is not at all likely to be improved by a critical analysis of his well-considered paper. In the course of business I am in the habit of passing frequently a certain street orator, a "high-pressure reformer on general principles," as Artemus Ward would say—whose great forte consists in knocking down his imaginary opponents in argument; but then, he sets them up himself, and having placed them in the most assailable position, he proceeds to demolish them in the most signal manner. Now "D. J." reminds me forcibly of my spouting acquaintance of the street corner. To accept the plain reading, or even the words of the text, in my December paper, did not suit his purpose exactly, and so he proceeds to alter both to his satisfaction, and having accomplished this, he sets himself up to "put down" "J. S." and "such-like" (how very courteous!) and he is quite ready to give us facts for "a lifetime," if he thinks it "worth his while." Surely the Editor will never permit such an oracle, and one so modest withal, to be lost to the readers of the 'Gardener,' but will exert those persuasive powers which editors know so well how to use, to induce this colossus of the "north," who wields his pen as he would a spade, to come forth and lend us his aid.

Now for "D. J.'s" handy way of "putting it." He says, "According to the opinion of 'J. S.' we may haul out our boilers and pipes." I

expressed no such opinion, nor even insinuated anything so absurd. Again he says, "I fear 'J. S.' is going to let his craft adrift altogether. A difference of 55° in six hours!" My words were, "If the temperature of a vinery must be kept low enough at night to arrest perspiration, it means that Muscats that have been allowed a temperature of 90° or 100° during a sunny day, when they are perhaps in bloom, must be treated to a temperature of 50° at night, to fall maybe to 45° before sunrise," thus allowing eighteen or twenty hours for the subsidence of the thermometer, taking its maximum at noon. Then, again, "D. J." makes me to say that I have "proved that Muscats will set like *Peas* in a temperature of 60°." My words were, "Will set as thick as *Hamburgs* in a temperature of 60°," &c. I think we may be permitted to doubt both the "facts" and intentions of one who deals in such an unscrupulous manner with his opponent's text. But let us hope that as "D. J.'s" literary experience improves, his knowledge and discretion will improve also. His paper shows abundantly that there is a want of information on the subject of temperatures in regard to plant life. In my last I referred chiefly to experience, and will do so again; but for the sake of those of your readers who have not such books at hand, and who would like further evidence on the matter, allow me to give the following extracts from Dr Lindley's 'Theory and Practice of Horticulture' on the subject of low night temperatures for the Vine:—

"In no part of the world are the Grapes more delicious than in Candahar and Cabul. On the 30th of June, this traveller (Mr Atkinson) saw donkeys laden with panniers of fine purple Grapes; and at the same time the paper on which he was writing curled up and became as crisp as if it was before a blazing fire. When he reached Cabul, in August, he found the bazaar filled with delicious Grapes in astonishing profusion. But what sort of nights had the troops in the spring of the year, when the Vines were growing and flowering and preparing themselves to bear fruit? On the 7th of March, near Shikapore, 200 miles *south* of Candahar, and above 500 *south* of Cabul, in the desert, we are told that the march took place on 'a brilliant starlight night; frost seemed to be in the air, it was so cool and bracing; after midnight the servants made up a blazing fire, for the north wind was blowing bitterly cold, and the traveller was glad of hot brandy-and-water.' Nevertheless, the day before, Mr Atkinson had been *grilling* at Shikapore; and the march was over level plains, and not among the mountains. Two days afterwards the weather is described as being oppressively hot at mid-day; then on the 19th March there was a hail-storm at night, and the air was 'cold and bracing,' and so on.

"Here, then, in a country totally different from the islands of the Mediterranean, where the Grapes are famous for their excellence, we have violent variations in temperature between day and night in the month of March, when the Vines are shooting; the air is cold and bracing by night, and the sun is grilling by day."

Then again, in the same page, Dr Lindley gives the extreme fall of temperature during the night in the interior of tropical Australia, as

recorded by Sir Thomas Mitchell, and which was made the subject of comment in the 'Journal of the Horticultural Society of London' at the time; but space forbids me quoting at length here: your readers must refer to the book itself. Only I may quote that the *Cymbidium canaliculatum*, the only orchidaceous epiphyte observed, was in flower under a night temperature of 33° and 34° , that by day not exceeding 86° . Here is a range of 53° , where plants more susceptible of changes of temperature than the Vine are found growing. And, further, judging from Mr Atkinson's experiences about Shikapore—grilling by day and frosty by night—we can only conclude that the daily range of the temperature must have considerably exceeded 55° . I am also informed from private sources, though I cannot give statistics, that the difference between the day and night temperature in some of the Vine-growing districts in the north of France is something remarkable. It is said that in clear weather during April and May, when the Vines are growing, it is not unusual for the mercury to range between 80° and 90° in the shade at noon, and fall nearly to the freezing-point during the night. At such times Vine-growers tremble for their prospects; but it appears the Vine when shooting will stand, without being materially injured, a temperature that is not actually freezing. That there is nothing improbable in what I have stated regarding the above temperature in France, is proved by the statistics of the Scottish Meteorological Society. Owing to the insular position of Great Britain, extremes of temperature do not prevail as on the Continent; but a reference to the tables of this Society will show that the daily range of temperature in Scotland during the spring months is very considerable, and sometimes excessive. I am not speaking of mean temperatures, which are valueless to a great extent. For instance, at one station we read of the thermometer in April registering $72^{\circ}.5$ max., and three days later 27° min. At another station the thermometrical range between these dates is $47^{\circ}.5$. Again, at Dollar, we find the noon-day temperature on a certain occasion in April registered at 80° , and falling to 31° the same night. Then, in East Lothian, between the 23d and 28th of July, the thermometer is fluctuating between 43° and 89° ; and so on. It must be remembered, however, that the ranges here noted are between the lowest night temperatures and the maximum in the shade, and do not represent the actual extremes which vegetation endures. For instance, at one station we find the thermometer in the sun recording $140^{\circ}.8$, where on the same day the highest in the shade was 60° . Thus, if we suppose the glass fell to 40° before morning, we have a range of 100° in 24 hours. This is what takes place in some parts of these islands, and the changes are more sudden, and therefore more destructive. But as under the clear skies of the Con-

continent and some Eastern countries, the sun is more powerful by day, and radiation more excessive by night, we may conclude that the daily range is much greater, only, being more constant, vegetation will get inured to the conditions in the same way that Vines will bear a bright sun if it is steady, under which they would flag after a period of dull weather.

This is the kind of information "D. J." seems to be craving for, and it is to be hoped the above will satisfy him to some extent. I think, at least, the above facts will show that, in recommending a minimum temperature of 50° for Vines (in the early stages of forcing) after a high day temperature, rather than trust to hard firing to no purpose, I have kept within safe limits.

I can see no reasons, physiological or other, for thinking that Vines, up till the setting period we shall say, can be injured in any way whatever by allowing the temperature to fall to 50° or 45° before morning after a bright sunny day and a high day temperature. This is my argument, and I shall gladly listen to any facts "D. J." or any one else may advance to the contrary; but they must be conclusive.

I have seen the thermometer in a long Peach-case once under my charge run up to 90° and 100° during the sunny days of April and May, and fall to 45° or 40° before morning, and this would go on for days: there was only 2 feet of space for ventilation altogether. Yet the crops of Peaches and Plums were always excellent, and are to this day. It is my regular practice here to run up our early Peach-house to 85° or 90° in sunny weather before the fruit is stoned, rather than admit heavy draughts of cold air, and I am perfectly satisfied on such occasions if the thermometer stands at 40° in the morning. I have, of course, no objections to a high night temperature comparatively, if it can be secured without much fire-heat. Our early Vinery is allowed to fall to 50° or 55° before sunrise in clear frosty weather up till the setting-time; and our maximum night temperature for Muscats is 65° , often falling to 60° before morning. In mild dull weather this practice is, of course, modified considerably: the temperature is neither so high by day nor so low at night. My only objection to a low night temperature is the time lost in getting up the heat in the forenoon in dull days, so as to have heat with light, when there are, perhaps, 700 or 800 feet of piping attached to one boiler. In a glass case here, devoted to Hamburgs and Peaches, we had at one time a Muscat Vine which invariably set well and equally, though it rarely had a night temperature above 60° , often not so high, while setting, unless the weather was mild, for there was not piping enough in the house to keep up a higher figure when the outdoor temperature was low, but we made the very most of the sunshine during the day.

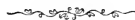
It was this circumstance which first led me to doubt the propriety of a very high night temperature for the Vine in the first stages of growth. I was a believer in high and dry temperatures once.

In conclusion, let me say a word about the mean temperatures of Beyrout, Cadiz, and Catania, which "D. J." says are, according to the late Mr Thompson of Chiswick, "respectively 69°, 63°, and 71°, while Vines are in flower." I presume, "D. J." is quoting from 'The Gardener's Assistant,' by Mr Thompson. If he is, he might have quoted his author fairly, and told us that these were the mean temperatures of the month of May (Mr Thompson says nothing about the Vines being in flower),—the *mean temperatures* of the *month* be it noted; and as they are not very high, the daily and monthly range must have been considerable—*i.e.*, much above and below these figures. To give an example, the mean temperature of the month of March in the south of Scotland is about 40°, but what is the range? Why, we read that the maximum for March 1871 was 68°.9, and the minimum 3°.6, or 29° of frost, and yet the mean temperature was above the average of the month. The mean temperature of the month of May is 50°, but the maximum for that month in the same year is recorded at 80°, and the minimum at 18°, or 14° of frost. These facts show abundantly how practically valueless are mean temperatures for conveying a just idea of climate. It is worth noting also, that the month of May in 1871 was characterised by an unusual amount of sunshine, or clear weather; and the consequence was, the mean temperature of the nights was *below* the average, and that of the days *above* the average, thus showing that extremes meet, as I have pointed out in regard to some Continental countries.

Mr Thompson's tables of temperature are valuable, I admit; but his deductions with regard to treatment, under altered circumstances in this country, are not always applicable. For instance, he recommends as the lowest safe winter temperature for Pines a mean just 10° higher than the Editor of this paper does in his book on the Pine-Apple, and Mr Thomson's practice is that of all successful Pine-growers nowadays; but I shall conclude, and by way of encouraging "D. J." to do likewise, I subscribe myself fully,

J. SIMPSON.

WORTLEY.



NOTES ON HARDY CONIFERS.

THUJOPSIS (THE BROAD-LEAVED ARBORVITES).

THIS new, and as far as is yet known small, genus, is so named from the resemblance of the species of which it is composed, both in habit of growth and general appearance, to their near allies the American

Arborvitæ. With the single exception of *Borealis*, which, though now believed by the most competent authorities to have its proper place among the Cypresses, is still popularly associated with this group, the species are natives of Japan; and though only introduced to British gardens at intervals during the last twenty years, enough has been seen of them to prove their adaptability to our soils and climate, and their value as outdoor decorative shrubs and trees.

T. Borealis (*the Nootka Sound Thujopsis*), also and more correctly called *Cupressus Nutkaensis*, is found wild in great abundance about Nootka Sound, and in various other localities on the north-west coast of North America. It was first introduced into Britain in 1851, and was described as forming in its native habitats a tall beautiful tree, of from 80 to 100 feet in height.

In cultivation in this country it is a straight-stemmed, conical bush, of a most symmetrical habit, densely furnished from the ground with spreading branches, abundantly divided into graceful plume-like branchlets, drooping slightly at the extremities. The leaves, which are short, imbricated, and thickly disposed on the branchlets, are of a dark glossy green colour, and sometimes, particularly when the plants are young, faintly glaucous on the under side. Of its merits as an ornamental tree it is impossible to speak too highly; its distinct, handsome appearance, freeness of growth in almost every variety of soil, and thorough hardiness in our severest winters and coldest situations, mark it as one of the most valuable acquisitions of recent years, and have already secured for it extensive admission into the most select shrubberies and pleasure-grounds. Though a most effective plant in mixed groups or in avenue rows, it is always seen to the best advantage when planted as a single specimen on a lawn, or any situation where, standing alone and free from contact with other plants, it is allowed to develop its beauties in form and colour to their fullest extent. It will be found to grow most luxuriantly where the soil is a peaty loam, and rather moist than dry; and while shelter from frost is altogether unnecessary, it should not be exposed to violent winds.

Like many of the Cypresses and Thujas, this superb tree is variable in its appearance, and many distinct varieties may be detailed among seedlings. One of the most interesting of these is that named *variegata*, which has its branchlets prettily tinted with a silvery or straw coloured variegation. It is a very desirable, but as yet a scarce, variety.

T. Dolobrata (*the Hatchet-leaved Thujopsis*).—Indigenous to high but sheltered valleys in Japan, and frequently met with in cultivation in that country as well as in China, both as an ornamental tree and for its timber, which, from its closeness of grain and durability, is highly valued, and used for a great variety of purposes. It is described as

forming in Japan a lofty, handsome, conical tree, with vertical branches, gracefully drooping at the points; the branchlets numerous, much compressed, and abundantly clothed with flat scale-like leaves regularly imbricated, of a bright glossy green colour on the upper, and silvery on the under, surface.

This grand species was first sent to Britain in 1854; and having since been widely distributed, and exposed to the rigours of our winters in the open air without injury, its perfect hardiness is now undoubted; and though of slow growth while in a young state, it seems to improve in that respect with age; and there can be no question but that it will come to be regarded as one of our indispensable ornamental trees. As seen here it is a bushy conical shrub, broad in proportion to its height, the main stem slightly in advance of the branches while young, but more decidedly so in the older plants. It makes most progress in strong loamy or peaty soils, moderately moist, and prefers a shady situation.

A fine variegated variety of this species was sent home from Yeddo in Japan, in 1861, by Mr Fortune, who found it cultivated in gardens. This pretty plant has the branchlets more or less freely tinted with pale yellow. It has proved to be equally hardy and of as free growth as the parent, and is well worthy of a place in the most select collection.

T. Lætevirens (*the Lycopod-like Thujopsis*), sent home a few years ago by Mr Veitch from Japan, is a dwarf shrub, rarely found even in the most favourable circumstances to exceed 3 feet in height.

This beautiful little plant has a dense, broadly conical habit of growth; and though said to be specifically different, is in general aspect suggestive of a miniature form of *Dolobrata*. It is, however, so distinct, that the one can never be mistaken for the other. The branches are very slender, and are divided into numerous flat fan-like branchlets, abundantly clothed with tiny neatly-cut leaves of a warm green colour, arranged with the utmost regularity, giving it a remarkable resemblance to a tree Lycopod.

Like *Dolobrata*, it is of slow growth, and though quite hardy, should always be planted in a sheltered situation. It prefers a rich, deep, and moderately moist rather than a dry soil. As a neat bushy shrub for rockeries, or small beds where only plants of such habits are admissible, it has few superiors; and, as its merits become better known, it will doubtless be extensively planted in such places.

T. Standishii (*Mr Standish's Thujopsis*), named in compliment to Mr Standish of the Ascot Nurseries, was sent home from Japan in 1861 by Mr Fortune, who discovered it near Yeddo.

This very handsome species is very aptly described as having an appearance "midway between a *Thujopsis* and an *Arborvitæ*." It

has an erect conical style of growth, densely furnished with slender branches, much divided into flat Lycopod-like branchlets, drooping at the points. The leaves, which in shape and arrangement on the stems are very like those of *Dolobrata*, but much smaller, are light, or yellowish green above, assuming a deeper tint in winter, and slightly glaucous below.

It is here thoroughly hardy, and seems to be quite at home under similar conditions to the other species. Though only seen in this country in a small state, and as yet comparatively little known, there is much in its appearance to warrant the belief that it will make a grand specimen ornamental shrub, and to recommend its being planted where such is desirable.

HUGH FRASER.



ASPARAGUS FORCING AND GROWING.

THIS choicest of vegetables, unlike French-beans, Seakale, or Mushrooms, in order to be forced with creditable success, requires a long period of preparation of the plant beforehand, although the mere process of forcing is simple enough. Good presentable Asparagus is not such an easy matter to secure, if we take the immense heads usually imported from France as the standard of perfection, and taking the time—four years of good culture—into consideration before it is fit to force from the time of sowing. There are various ways by which Asparagus may be forced, and there are also various ways of growing it for forcing: whichever mode is adopted, one thing is always essential—namely, a well-drained, deep, rich soil. One of the best quarters of Asparagus we have ever seen was a very old one, perhaps a dozen years at least. The subsoil was a pure yellow sand, the soil about 3 feet deep, the surface quite flat. Nothing in the shape of a bed was in the whole quarter, and the seed might have been sown broadcast, so irregular were the plants. This quarter was annually dressed with several inches of rotten hotbed manure, which wasted and got washed into the porous soil with rains. This, with perfect drainage, we believe maintained the vigour of the plantation. It is not advisable to plant Asparagus, however, in this fashion.

Our favourite plan is to plant in single rows, 3 feet apart and 18 inches from plant to plant: it is convenient for cleaning; gives the roots room to spread, without interlacing or struggling with each other; and although the plants are planted on the flat, an annual top-dressing with manure over the crowns, and the treading between the rows, causes the rows to assume the form of a ridge, which tends to throw the rain off the crowns, and prevent stagnant water at the most vital

point: and moreover, to have good Asparagus, it is essential that the early growths are not broken over by high winds. When such is the case, the later growths do not come so strong, and also lose time in coming to maturity. Planting in single rows enables workmen to get easily among the plants, to stake and tie them when necessary. The above distance will be found none too wide to allow strong Asparagus to develop itself. Another point should be attended to when strong Asparagus is grown to be forced, that no seed be allowed to swell on the plants—certainly none allowed to ripen. This is as essential as cutting the flowering shoots off Seakale or Rhubarb.

No one will think of planting Asparagus without first trenching the ground and manuring it heavily throughout, and more especially in the top spit of soil. In planting, the roots should be spread out horizontally in a circle, it being the most natural position: they radiate in all directions just under the surface, and are ever ready to appropriate nourishment spread over them. The crowns of Asparagus have a tendency to grow out of the surface of the soil, and to have them washed bare with rains. To obviate this, and also to take advantage of it, we have grown the Asparagus in 4-foot beds, sunk 9 inches below the general surface instead of being raised that height, with raised ridges where the alleys should have been. The beds were annually top-dressed in the autumn with good manure, and well supplied with water in summer, and it was decided that they did considerably better than the raised beds: the roots in this way were never laid bare by the rake or by rain.

On heavy soil we have found burnt clay a most excellent dressing to be incorporated with the soil along with the manure, as the trenching goes on. We are at this moment engaged in trenching out an old Asparagus quarter, and find the roots are down plentifully to the depth of nearly 3 feet, which shows the necessity of deep and thorough cultivation. Much stress is often laid on salt as a manure for Asparagus, probably because it is a seaside plant: we have repeatedly tried it, but very much doubt its influence for good or bad, except that it kills for the time any surface weeds. Do the French use salt to produce their colossal heads of Asparagus? or is it plenty of room in a rich soil, and particular attention to watering in summer, that is the secret?

Once secure good crowns, and the forcing of Asparagus is a very simple matter indeed. Our own plan is that usually followed, lifting the plants with all the roots possible, and packing them close on a bed of leaves in a heated pit with leaf-mould over and about the roots, care being taken that the heat does not rise too violently. In about a month, the grass will be fit to cut; this is for the earliest lot, put in the end of October. Succeeding beds are made up on the top of the

leaves accumulated in autumn, in cold frames: these will come in on about three weeks from starting.

This plan of forcing, however, involves a considerable amount of labour, and space to grow on succession of beds, as at least the same space must be annually planted as is laid vacant by lifting; and as Asparagus is not fit to force until the fourth year, a large breadth of ground must be occupied, which is a serious consideration with many gardeners. To meet this difficulty, the plan is sometimes adopted of building up the sides of one or a series of beds with brickwork pigeon-holed, to admit of heat from fermenting leaves and litter placed in trenches on either side of the bed, and covering the bed with cold frames also covered to retain the heat. The same principle is also sometimes adopted, but substituting hot-water pipes in place of the leaves and litter. This last will occupy the least space, and is perhaps the most satisfactory arrangement where expense is no consideration, but we have never had any experience of the plan.

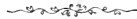
We can, however, confidently recommend a plan the same in principle to the above, but much more simple in working, and which does not so soon exhaust the Asparagus as the hot-water way. It should be carried out in the following manner.

Let the Asparagus be planted with the usual preparation in 4-foot beds of any convenient length, but better if they are not very long, say 30 feet or so, with easy access to each end. After the plants have got strong enough to force, every other bed may be lifted for forcing in pits, the remaining beds to be left for forcing on the ground. To accomplish this dig out all the soil to the depth of 3 feet from the beds which have been lifted, and wheel it upon neighbouring quarters, making the sides perpendicular, which will be easily done, as the soil will be compact and full of roots. There will thus be a bed of Asparagus alternating with a deep trench some 5 feet wide. In the autumn, when forcing commences, leaves can be introduced and trodden into the trenches; and at any part where extra heat is wanted, stable-litter should be mixed with the leaves by turning the latter over.

Two or three 12-foot lengths by 4 feet wide of span-roofed frames, or plant-protectors, are far handier than lean-to frames for covering over the Asparagus; and as one part of the beds is cut and done, the frames can be shifted onwards to fresh pieces of the beds as required, stirring and mixing up the materials in the trench. It is best not to over-cut any part of the bed; it will easily be seen when the Asparagus begins to show signs of weakness, when cutting should cease. When the frame is removed to another piece of the bed, that forced piece should not be left uncovered, but have part of the litter strewn over it to exclude frost. The fermenting material should not

be removed the same season it has been used, but allowed to remain, and the Asparagus will root into it and strengthen, and it should be allowed to rest for one year, except a little cutting in the natural way in spring. Every alternate year the material may be removed, when it will be found to be capital leaf-mould, rotten, and fit for any use about a garden where a rich mellow material is wanted. The roots of the Asparagus should be saved, and allowed to hang down by the sides of the trenches, as they will still be of assistance to the plants when forcing begins again. The space over the leaves need not be left vacant throughout the summer, as, with a few inches of soil thrown over them, crops of Radishes, Lettuces, French-beans, Vegetable Marrows, New Zealand Spinach, or anything the gardener chooses to grow, can be taken off the space. Much attention has been called to a new American Asparagus called Connover's colossal: it remains to be proved whether it is really different from the common. If it proves a large variety under ordinary culture, it will be a decided acquisition. The old variety can be grown to very colossal dimensions, which may be seen any day at this season by walking down the central avenue in Covent Garden market. That there are different varieties of one common sort is certain, as there is in everything grown from seed. Crowns of a dark-reddish colour may be seen anywhere growing side by side with others of a bright pea-green and also intermediate shades, but we believe size entirely depends on culture. Here we find Asparagus does best in a part of the garden where the soil is friable and open, with a moist bottom; where the subsoil is on the gravel, hot and dry, it does not do nearly so well.

THE SQUIRE'S GARDENER.



VINE-GRAFTING.

THIS subject has received considerable attention from cultivators of late. Various modes have been tried to improve the Vine by grafting, and the results, favourable and otherwise, have been reported in the different Gardening periodicals from time to time.

It has been proved that some Vines bear much better when grafted on a different stock than when growing on their own roots; that grafting has been the means, to a certain extent, of preventing varieties subject to cracking and shanking from doing so; and that the fruit is considerably improved in size and quality.

My object in writing is not so much to speak of the results of grafting as of the practice of grafting itself. Loudon in his 'Encyclopædia of Gardening' describes a great many methods of grafting the Vine, and quotes his authors on the subject. Others have written their experience on the subject since, but none of them differing much

from what is to be found in Loudon's works. Budding has been successfully performed by some; but inarching and grafting are the modes generally practised.

There is not much difficulty in grafting the Vine by any of the ordinary methods, but one of the best we have seen is that practised by Mr Johnston of Terreagles Gardens, near Dumfries. Mr Johnston has been a zealous and successful cultivator of the Vine for more than thirty years, and has experimented a great deal upon it. He has tried every method of grafting known, and has come to the conclusion that for Vines there is no better method than that which he has practised for a number of years with every success, and which he has very properly termed "Dovetail grafting" (fig. 10). It is simple, as well as sure, and fruit can be obtained from the graft the first year after its insertion.

The grafting is performed in the following manner, and before the sap is in motion. The stock

may be of one year's growth, or more; but young wood from one to four years old is preferable. The place selected for inserting the graft should be opposite a bud, or spur, with one or more buds to draw the flow of sap to the scion, which also prevents bleeding. Having selected the stock, the wood should be cut out of it from 2 to 2½ inches in length to a depth corresponding to the thickness of the scion, in the same manner as dovetailing in carpentry is performed. The scion is then prepared by being cut into the pith, leaving the bud in the middle, and made to fit neatly into the stock, after which it is firmly tied with

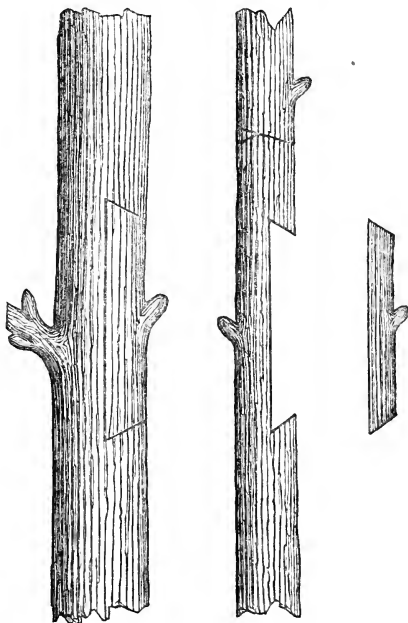


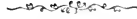
FIG. 10.

matting and clayed over, leaving a small hole opposite the bud, so as not to obstruct its growth. A little moss is then tied over all, and kept moist for some time till the bud begins to grow. After it has grown some length, the opposite shoots are shortened, and eventually taken off altogether.

Mr Johnston informed us that he has grafted old stunted wood in the above way, where the wood was bare ; but in cases of grafting, young wood is to be preferred.

A. PETTIGREW.

[We have practised this mode of grafting, and can endorse what Mr Pettigrew says of it.—ED.]



THE PROPAGATION OF LAPAGERIA.

THIS beautiful greenhouse climber is somewhat difficult to increase by cuttings ; it is, consequently, yet dear, even though it has been twenty years or more in cultivation. Nor is it very free in producing seed. The white variety is especially shy in seeding, and we have no experience yet, as to whether seedlings of it invariably come true. At Ferniehurst, the other day, our attention was drawn to a method of propagating Lapageria, which to us was quite new, and by which Mr Culley, the able gardener, increases it in large numbers. Mr Culley is as successful a cultivator of Lapageria as of Orchids, and the other select stove and greenhouse plants which form the splendid collection at Ferniehurst. A considerable portion of one house is devoted to Lapagerias in pots. None are planted out, and the pots used are small in comparison with the development of the plants, which are trained in easy style from the pots upward to near the roof of the house, and there spread out in all directions. One of the largest plants of the white variety we ever met with is here, and we observed several pods of seed on it advancing toward maturity. It ripened some seed last year, from which Mr Culley succeeded in raising a fine batch of seedlings, which he is hopeful may be true to the parent. But to return to the main object of this notice—the propagation of Lapageria by the method which, so far as we know, has been first practised at Ferniehurst. Mr Culley yearly cuts out a number of the shoots of the previous year from the established plants. It occurred to him that these might be turned to account in increasing the plant ; and as an experiment, he coiled a strong shoot several feet long round a cutting pan that was previously prepared by being thinly crocked, and three parts filled with sandy peat. On this was laid a thin layer of silver sand, and the branch was coiled upon it and secured by running in sand till the pan was nearly filled. The leaves are retained on the shoot and brought up to the surface as the sand is run in round the coil. The pan is then put in strong heat and kept constantly saturated. Nearly every joint breaks roots and sends up a strong shoot, all of which may be separated in due time and established as individual plants, or the panful may be potted or planted out for the purpose of forming specimens quickly. Mr Culley did not cut or tongue the joints before

coiling, and is of opinion that it is unnecessary, though a little scarification on the under side might facilitate rooting and expedite the process.

W. S.



HOTHOUSE SHELVING; CHEAP, PROFITABLE, AND GOOD.

It is my intention here to apply the above terms to the system of lining hot-house shelves with zinc, but more particularly forcing-houses, where I think it is essential. It is not my intention to enlarge on the subject, but merely to show the practical application of the system.

As the schoolmaster did with the boy after he had made him spell window, he sent him to clean all the windows in the school so that he might really understand what window meant; so in this case I have both spelt my subject and had the practical application of it, and now I will try and give some reason for introducing it so emphatically. Taking the first named—viz., cheapness. Our shelves cost about 8d. per square foot, fitted and all complete. No doubt this comes to a little expense at first, but I have not the least hesitation in saying that it will more than pay itself when the numerous benefits derived are considered. We all know that wooden shelves in a forcing-house stand but a very short period where strawberries, French-beans, &c., are being continually watered upon them. Of course this depends greatly on how they are kept painted,—but even paint will not save them long; where, on the other hand, if they are covered with zinc they will last a very long time, although you force plants on them all the year round, simply because they never get wet. I think that this clearly shows that the first expense need not stand in the way. It is not only a cheap but a profitable plan; but this pertains more particularly to those placed in circumstances similar to my own, and they are these: I have two shelves on the back wall of a forcing-house, the one immediately under the other, both equally good for forcing now; but previous to having them lined with zinc the under one was next to useless, because of the continued deluge coming on the plants from the one above. Now I can have as good a crop on the one as the other; and not only that, but the whitewashed wall remains white now. Formerly I had not begun to force ten days till all whitewashing labour was in vain (so far as look was concerned); for instead of being white, it got covered over with that unsightly, green, glutty substance, which made the place look as if no one had been in it for six months previous. However, these are things of the past with us now. It is not only a cheap and profitable but a good plan, simply because there can be no doubt about it; and that is more than can be said of wiring garden-walls. My mode of covering shelves with zinc is to have it soldered into 9-foot lengths, and about 2 inches or more broader than the shelf. This is to form a curve to keep the water in; and inside the curve next the front we have a very strong wire, so that in removing pots off or on to it, the curved or rolled edge may not be injured; and all the other lengths are exactly the same, and they are made so as to fit into each other to prevent the escape of any water. Of course they might be soldered all into one piece, but it would not be so easily handled in taking them down for cleaning, &c. They are slightly raised towards one end so as to give the water a run. Then at the lower end we have a waste-pipe which conducts the water into the cistern from which we water our vine and peach borders.

W. KATER.

HINTS FOR AMATEURS.

SOME trees on south walls may now require disbudding. This work should be done piecemeal, first taking off those shoots which are growing out from the walls, topping back the stronger ones, and where they are very thick, which may be at the top of the tree. The greater part of tree-work may be done while growth is going on. Young shoots may be trained over old ones destitute of wood-buds. Some object to spurring Plums, Apricots, &c., as it is supposed to bring the bearing-wood away from the wall; but such need not be the case, as when the buds growing nearest the wall are chosen, they may be kept in easily. We always prefer having some nice shoots left to fill up vacancies. Trees exposed to easterly winds should be protected judiciously, but not coddled so that the blooms and young wood may be kept from light and air. All arrears had better be brought forward without delay; better to do it late than that it should be neglected. There need be no hurry in tying up newly-planted trees, as they should be allowed to settle down at the roots; they are liable to be cut in the bark till the soil is solid at the base.

Shrubs may be planted if they are not into growth; plenty of room to the roots, and free soil placed among them, is necessary to success. Where a mulching of manure can be given before the surface-soil is placed in position, the shrubs will be greatly benefited and labour saved in watering. If the weather should set in dry, water must be given in liberal quantities; continued dribblings are worse than useless, but the syringe may be used after dry days over the foliage. Keeping the soil continually sodden about the roots of trees and shrubs while the weather is cold does great injury, as the roots are likely to perish. Shrub-cutting should be finished as early as possible. Large old evergreens when not well furnished with foliage are very unsightly, and are better cut down to make healthy growths. Lawns should now be kept well rolled and swept preparatory for scythe and mowing-machine. Beds should now be well turned up and broken, giving manure or fresh soil as may be necessary. Hardy plants for edgings, &c., may be planted as early as possible. Beet (Osborn's dark, *alias* Dell's) may be sown where it is wanted for dark colouring; some prefer planting it out from pots, but we never had it so fine as from sowing in the space where it was to remain. When decorative plants are placed in flower-beds or borders now, they should be arranged to suit other occupants.

Edgings of turf may be trimmed, but not in the way it is so often done, cutting the beds or walks out of all size, reducing the surface of turf; also walks are much injured by cutting turf away from the gravel, leaving a margin for weeds and worms. Place the line along, beat the

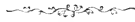
edging out if it requires it, and then cut off any part which is out of proper bounds. Where turf has been unduly cut back, the earthy margin may be taken away, a quantity of gas-lime strewn along, and gravel made firm over it; worms and weeds will be less troublesome there, for one season. Let gravelling be finished as early as possible. All should now have a neat and orderly appearance.

Seeds of hardy annuals and perennials may be sown at once, if weather will allow; but many annuals, such as *Virginian Stock*, *Nemophila*, *Shortia Californica*, &c., do well sown late in May. Sow *Asters*, *Stocks*. *Mignonette*, *Sweet Peas*, for late work; the two former under protection.

Chrysanthemums should be potted into larger pots; cuttings of them newly struck should not be allowed to starve for want of pot-room: keep the plants growing freely with plenty of air on the frames. *Dahlias* should be hardened off after they are rooted and growing; but this does not mean starving in small pots and being exposed to cold currents of frosty air. Get plenty of cuttings put in of bedding plants while there is yet time to get up stock. Plant out *Gladiolus* roots in rich soil; they may be placed in shallow boxes of earth and kept cool in the shade, with the view of keeping them back. Select a good stock of plants from the collection of bedding *Pelargoniums*, to be potted on for summer flowering; also *Petunias*, *Sálvia patens*, *Lobelias*, *Verbenas* (free-growing kinds), shrubby *Calceolarias*; these grown in good turfy loam, rotten manure, leaf-mould, and sand, make a fine display when other plants are scarce. Keep herbaceous *Calceolarias*, late *Cinerarias*, supplied with manure-water; good surface-dressings will help them much. Keep young plants of *Cinerarias*, *Primulas*, and *Cyclamens*, growing freely, but not in close temperatures. Seeds of these may be sown in light healthy soil; slugs are ready to devour them if allowed. Where young seedlings are being raised they may be examined by candle-light and the enemies may be found at their work of destruction. Keep hard-wooded plants growing freely, and admit fresh air when weather will allow; a damp stagnant atmosphere will do them much injury. *Camellias*, *Cytisus*, *Acacias*, *Coronillas*, *Epacris*, done flowering, may be encouraged to make free growth, using the syringe freely over them, and shutting up with sun-heat; pot such as may require it when free growth has commenced. *Pelargoniums* coming into flower may be benefited by manure-water and rich surfacings; but not till their flower-buds are formed. Late successions should be potted to larger sizes, staked out, and turned round to the light.

Keep decaying leaves off all plants, stir and clean surfaces of pots, water judiciously and liberally where drainage is good and roots plentiful. Newly-potted plants (except when very small pots are used) seldom require watering for some days after the shift: a moist, rather

close atmosphere is better, the roots will thus lay hold of the new healthy soil ; but a cold drenching at the roots at once is a double check. Soil should be moist before it is used in the pots, and the ball of earth round the roots should also be in a moist healthy state ; a dry hard ball at potting time is most injurious, if it does not kill the plant. Get boxes and cases ready for window-gardening ; they may be filled with good turfy loam, resting on good drainage, and the plants arranged to taste, and grown on under protection till they are wanted. Look well after green-fly, thrips, and all other insects among plants. All plants requiring heat to grow them should now be potted, unless they are flowering or coming into flower ; a mixture of peat, turfy loam, sand, and charcoal suits most of them.



GROS COLMAN GRAPE.

SHOULD any variety of late Grape in particular necessitate the practical application of Mr Henderson's appreciated remarks on "Ripening late Grapes" at page 61, it certainly is Gros Colman.

When thoroughly ripened and finely finished, in appearance as a Black Grape it has no equal. When badly matured it is but an indifferent variety. The too frequent defectiveness of this noble variety is entirely obviated by an earlier and longer subjection to a higher temperature than is generally applied to late varieties. Though less in size of berry than the "Duke of Buccleuch," yet individually they are very large. When grown under the customary practice of late starting, or natural starting, as it is often plausibly termed—that is, the withholding of fire-heat until the advance of genial weather promotes growth, little signs of vitality are observable until well into April or even May. By the month of September colouring is not well begun ; and however much fire-heat may be employed after that time, they never acquire that degree of perfection gained by those started in March, when colouring commences at a much earlier date, under the influence of that amount of sun-heat indispensable to the complete ripening of Grapes that are intended to remain in a presentable condition during winter. Where the saving of fuel is aimed at, early-ripened Grapes require far less firing while keeping, which more than recompenses for the first outlay. Fire-heat, on the other hand, fails in preventing shrivelling and decay in the case of badly-ripened crops. My object is to commend Gros Colman as being one of the very few Vines of Continental origin possessing sufficient merits to secure for itself a place, and warrant its extensive cultivation, in our British collections. Gros Colman, next to Lady Downes, is the most worthy of a place in every vinery where late-keeping Grapes are grown. Its handsome compact round bunches, large globular berries, with a peculiarly palatable soft rich flavour, with skins as thin as those of a Hamburg, and retaining a plump condition of berry for a long time, render it a late Grape of great value.

Previous to this Vine being extensively planted at the Tweed Vineyard, I am not aware that it existed in any quantity in Scotland. I understand its captivating appearance as seen at the Vineyard during last season has created a great demand for it.

J. M.

PINE-APPLE GROWING WITHOUT BOTTOM-HEAT.

HISTORY repeats itself, not less in scientific Pine-apple growing than in any other branch of culture. Your correspondent from Elvaston Castle astonishes me by not mentioning the performances of the late Thomas Andrew Knight, Esq., as he may be said to have perfected the new system of growing Pine-apples without fermenting materials of any kind. If Mr M'Kellar turns to the Horticultural Transactions for 1829, or to the 'Gardeners' Magazine' of the same date, he will find Mr Knight's plan of growing the Pine-apple in detail. The late Mr Loudon did not believe that Mr Knight had succeeded in accomplishing what he had reported to the Royal Horticultural Society, as he stated that he had seen some one who told him that the plan did not answer Mr Knight's expectations.

I and some other gardeners went to Downton Castle to see the said Pine-apples, and wrote to Mr Loudon, after which he was obliged to acknowledge that Mr Knight's report of them was a correct one.

As for myself I never saw a house of Pine-apples more beautiful; the kinds were chiefly Black Jamaica and the Green Olive, two of the best-flavoured Pines then in cultivation.

It appeared strange to me that Mr M'Kellar did not mention the writings on the same subject of the then philosophic President of the Royal Horticultural Society.

I should have been more surprised in this case, had not a fashionable writer on agriculture called upon me the other day, when in the course of conversation I said, Come and I will show you the portrait of the greatest philosopher and the best farmer of his generation: this is Thomas Andrew Knight, Esq., of whom it was said in the 'Athenæum' newspaper, that there was not a man left in all Europe who could fill the gap his death had made. The gentleman in question said, This is the first time that I have ever heard of him. Therefore I take it for granted that Mr M'Kellar has never heard of Mr Knight's Pine-growing; this being the case, it places Mr M'Kellar amongst the philosophers, as no gardener would blindly go to work on such a business who had not philosophised on the atmospheric conditions necessary for such an accomplishment.

One would have thought that the gardeners at Downton Castle, who have lived there since Mr Knight's death, would have been proud to maintain that remarkable plan of cultivating the Pine-apple which Mr Knight left in full force, but I understand that they have not done so. The house is still in good order: a curvilinear roofed house, with glass down to the curbstone, so that it receives every blink of sunshine; and the long chimney-pots (so to speak) that he used to grow the Pines in stand useless at the back of the house.

But why did not the Royal Horticultural Society take the matter in hand and carry the plan into thorough effect, by which means they would have turned out their pupils more fully accomplished? Instead of which they gave up Pine-apple growing altogether: instead of doing "something for gardeners" they have fallen, since Mr Knight left them, from the highest pinnacle of philosophic fame to that of issuing a company of itinerant floral adventurers who go about the country to hold shows of flowers of other people's cultivation, to "turn the penny" for the all-devouring South Kensington.

When the large-hearted Mr Paterson, then gardener to the Earl of Chesterfield, held his universally public show by the side of the Royal Agricultural Exhibition at Northampton, he said, If I have a surplus of cash over its expenses, as no man can claim it, we will devote it to the support of the widows and orphans of our class. But has the Royal Horticultural Society said anything of the kind about their surpluses at their provincial shows? Nothing of the kind. Rather than do anything for the unfortunate creatures mentioned above, they try to "please" the gardeners by holding a mock congress, and take every original idea sent thereto off to South Kensington. If any one could claim the surplus (£1000) which they took from Birmingham the other day, I should say that the Birmingham Botanical Society should be the first claimant on the list.

JOHN PEARSON.

KINLET, NEAR BEWDLEY, *February 12, 1873.*

SYRINGING PEACH TREES WHEN IN BLOOM.

IN the March number of the 'Gardener' for this year, "D. J." says Mr Simpson of Wortley is somewhat given to startling ideas—I presume because he recommends syringing Peach-trees when in bloom. Perhaps it may interest some of your readers if I state a few facts about syringing Peach-trees when in bloom that have come under my own observation.

The first time I saw it done was at Ringwood, Derbyshire, by Mr Prince. His directions to me were, "Syringe when the weather is favourable, using your own discretion;" and if I have understood Mr Simpson's notes on syringing aright, his directions would have been the same; for he states, in the 'Gardener' for April 1872, that his trees were syringed about three times a-week during the dullest weather. It is absurd to think that Mr Simpson meant syringe so many times a-day, without taking any notice of the weather, or without taking into consideration whether the heating or ventilation were sufficient. I should have stated that nowhere have I seen finer crops of early and late Peaches than at Ringwood. There were two grand houses of Peaches here last season, both of which were syringed when in bloom; and I must say, two houses just as good that were not syringed. I have not a word to say about Peaches setting well on the dry system, but I consider syringing much better for the health of the trees, especially when you are obliged to put a promiscuous lot of plants in the house, and there is danger of getting thrip or red-spider on them.

RANGEMORE.

R. L. M'INTOSH.

NOTES ON HARD-WOODED GREENHOUSE PLANTS.

Acrophyllum venosum.—A very pretty greenhouse plant, not nearly so generally cultivated as it deserves to be. It is a compact-growing plant, that may easily, by means of pinching alone, be formed into a handsome specimen. It flowers freely in a large or small state, but is most effective when grown to full specimen size, say about 3 feet by 3 feet. When grown in peat, or in a compost in which peat forms the largest portion, its foliage, which is one of its finest features, is rarely so good as when loam is the principal component in the soil. In light, turfy, rich loam, the plant grows very vigorous and compact, and both the foliage and flowers are finer tinted and better developed than in peat, in which it is very often grown. The drainage should be good; the plant requires ample supplies of water in the growing season, but cannot endure stagnation. It flowers in early summer, and, when a shift is necessary, it should be given soon after flowering is over, so as to enable it to make vigorous growth and preparation for next season's flowering. A good exposure to light in autumn is of essential importance to the thorough ripening of the wood, on which the quality and profusion of the flowers depend; but during the growing season it is better to be shaded lightly from bright sunshine. The leaves are in whorls of three, oblong, roughly serrated, leathery, light green, with a bronze tint on the upper surface, and somewhat glaucous below. The flowers are creamy-white, tinged with rose, in whorled spikes. It is easily propagated by cuttings of partially-ripened wood, in very sandy soil, in a cool propagating house. They should not be hurried in rooting by being put into heat; even if they succeed in forming roots, they never make a healthy start, and too often die. The plant was formerly included in the genus *Weinmannia*, but was separated from it by Bentham, and left little or nothing behind of horticultural interest under its former name.

Adenandra.—In this family there are several very handsome greenhouse shrubs. The two which the writer considers best are *A. umbellata* and *A. uniflora*. The former is the largest-growing species, and the freest-flowering, but the flowers of the latter are individually larger and more showy. They are early spring-flowering plants, coming into bloom about the middle or end of March, and lasting about six weeks. The flowers are white suffused with pink, and are borne at the extremities of the branches, in umbels in the case of the first-named species, and singly in the case of the second. They are easy plants to cultivate. Being natives of the Cape of Good Hope, they like a cool greenhouse temperature, similar to that of a heath-house during winter; but in spring and summer they like a warmer atmo-

sphere, especially when making their growth. Good fibrous loam is the soil in which they thrive best: if dense and heavy, it will be improved by mixing a little good fibrous peat with it; and sand, in any case, is an essential part of the compost. The drainage of the pots should be good. The plants should be cut back more or less immediately after flowering is over, and it may be necessary to thin out the branches at the same time, in which case the weakest should be selected for removal. In thinning out, care should be taken that the plants be not opened out too much, while the opposite extreme of excessive thickness is also to be avoided. They are easily propagated by cuttings of nearly ripe shoots inserted in sandy soil in a cool propagating-house, giving them time to establish themselves, not attempting to hasten them in any way.

W. S.

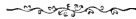


A WORD ABOUT MELONS.

THE last year being a very dull and wet season, the crop of Melons in general was very poor. The want of sunshine tells much against the Melon when in flower. I tried an experiment last year with the Melon, which I give to the readers of the Magazine for what it is worth. The experiment was this: After impregnating the flower, I tied the petals together. This I did with the view to keep dampness from the heart of the flower, and the result was that we had a splendid crop: in eight lights upon dung we had sixty fruit, some of them about 6 lb. Some of the readers of the Magazine might try the experiment this season, and see how it succeeds with them.

ALEX. GIBSON.

VOGRIE, FORD.



PLEIONES.

HAVING been a reader of the 'Gardener' since its commencement, I naturally take a little interest in reading and supporting it—by recommending it amongst the gardening community. I was pleased to see, in a late issue, "Notes on Pleiones," by F. W. B.; and I trust a little of your space will be devoted to Orchids and stove-plants.

Pleiones deserve to be more known and grown. Perhaps they would be if they were rather cheaper. I had one pot of *P. lagenaria*—an 8-inch common flower-pot—with 13 bulbs, each bulb carrying 2 spikes, making 26 spikes. It was very much admired. Some of the bulbs measure 2 inches across. They were grown in a mixed collection of Orchids; but I never allowed them to go thoroughly dry. I consider it weakens the bulbs, and likewise the bloom, to dry them much. They remain in bloom nearly 4 weeks in a cool stove. I have now several in peat, sphagnum, a little loam, and rotten manure, giving them a slight bottom-heat to start them. Could any of your readers let me know where *P. humilis* can be obtained—good bulbs.

NORTS.

THE PEACH AND NECTARINE.

(Continued from p. 122.)

DRAINAGE, DEPTH, AND WIDTH OF BORDER.

WHEN the Peach-house occupies a site where the soil and subsoil are uncongenial, such as poor sand, an irony gravel, or a cold stiff clay, the whole should be removed to the depth of 3 feet, and the site surfaced with a 3-inch layer of concrete, giving it an even slope from the back wall to the front of the outside border in the case of lean-to houses; the slope to be from the middle of span-roofed houses to the front on each side. Over the concrete run tile-drains at right angles across the border, 8 feet apart, into a main drain in front, and below the level of the cross drains. Over these drains and the whole concrete lay 8 or 9 inches of broken bricks, or coarse gravel with the sand sifted out of it, and blind the whole with finer gravel; over this lay a thin turf, grassy side downwards, and the site is ready for the soil. This leaves about $2\frac{1}{2}$ feet up to 3 inches above the front lintels or arches of the house for soil; and allowing for the necessary slope of the border, at the extremity or front it will be a little less than 2 feet. I am not an advocate for very shallow borders, when the drainage is as efficient as has been described. This matter should, however, be decided to a certain extent by the nature of the soil and the amount of rain that falls in the locality. When the soil is heavy and the locality very wet, the borders will be deep enough at 2 feet. Their width should be regulated by the width of the house. A lean-to house 16 feet wide will require an outside border 16 feet wide, thus giving 16 feet for each of the two sets of trees, the one set on the back wall and the other on the front trellis.

Where the subsoil consists of a clean open gravel, concreting is not necessary, and the natural drainage being good, less artificial drainage will suffice.

SOIL.

It is an established fact that all stone-fruits can be grown to the greatest perfection in strong-holding soils. This fully applies to the Peach, for it is on a strong calcareous loam, resting on a dry bottom, that it thrives best. The healthiest Peach-trees on open walls we have ever seen were grown in a deep strong loam, resting on an immense depth of chalk; and, generally speaking, the limestone districts of England produce the finest outdoor Peaches and other stone-fruits. These facts apply with equal force to the culture of the Peach under glass. To produce the most healthy, fruitful, and long-lived trees, the best soil with which to form a Peach-border consists of the top spit of some old pasture-land of a calcareous nature. It should be taken to the depth of 6 inches, inclusive of the short verdure peculiar to such land.

When carted in, stack it into something like large potato-pits; and if it can be allowed to lie for eight or nine months before being used, all the better. When it cannot be so arranged, it can be used as it comes from the field. Before it is wheeled into the border it should be roughly chopped up with a spade. Then add to every twelve cart-loads one of old lime-rubbish, one of charred wood, and 2 cwt. of half-inch boiled bones. Where neither lime-rubbish nor charcoal are procurable, an equal proportion of charred soil can be substituted. These should all be well mixed together and wheeled into the border when in a dry state, making it rather firm by beating it with the back of a fork, and allowing 2 or 3 inches for subsiding. As in the case of Vine-borders, I recommend that only part of the border be made at first, the rest to be added in 3 or 4 feet widths, as the roots of the trees extend. In thus making a Peach-border with fresh, turfy, strong loam, I do not advise the use of any manure except the few bones, which stimulate slightly over a long series of years. Common manure, either from the stable or cow-house, is undesirable at first, on account of the natural tendency of young Peach-trees to make rank, unfruitful growths. The borders can be enriched in after-years, when the trees require it, by top-dressing and watering with manure-water.

I would be sorry to convey, by these directions, the idea that very considerable success in Peach-culture is not attainable except when fine fibry calcareous loam can be had from an old pasture. No doubt the character of the soil in some gardens demands that all, or nearly all, the soil for the Peach-border should be exchanged for some of a very different character. Where the natural soil is very sandy or gravelly, and shallow, satisfactory results need not be expected unless fresh soil to some considerable extent be added to it, or wholly substituted for it. In this case, and when strong loam cannot be had, some strong soil, of a sound clayey nature, should be mixed with the light soil; and the parings of roadsides, with the herbage and roots, will also assist in making the soil more suitable. Where, on the other hand, the natural soil is a very strong, adhesive clay, its unsuitableness in that respect can be greatly remedied by burning a third of it and mixing it with the original, and by also adding to it a portion of road-scrapings. Where the natural soil of a garden, however old, is of a loamy nature, tolerably deep, and resting on a dry healthy subsoil, and where the fine loam I have described cannot be had without great expense, I do not hesitate to say that very fair success in Peach-culture is attainable by merely trenching it, and mixing in a few bones and a little lime-rubbish. These remarks are intended to encourage those who cannot get the turfy soil that may be considered first-rate, but without which comparatively good crops of Peaches can be produced. D. T.

A PLEA FOR LARGE-FLOWERED AND FANCY PELARGONIUMS.

(Continued from page 141.)

As soon as the cutting-pots are filled with roots, but before the balls become matted, the plants must be shifted into 4-inch pots. Drain the pots efficiently by placing flat pieces of crocks on the holes in their bottoms, over which put an inch in depth of half-inch bones and wood-charcoal. Next to this the rough portions of the compost, to a depth that when the balls are set on it the plants will stand no deeper in the new pots than what they did in the cutting-pots.

These rules in reference to drainage and keeping the plants a little higher in the fresh pots must be attended to at each succeeding shift. Some varieties amongst the fancies are at times subject to canker, or rot off at the surface of the soil. As a preventive to this, they should stand a little higher in the new pots than they did in the old, giving the soil a gentle slope from their stems to the sides of the pots, which will prevent a superabundance of moisture at a point where it is likely to be injurious.

All being ready, turn the plants out of the pots, and, without disturbing the balls, remove a little of the old drainage. Place them in the pots prepared for them, and with a flat piece of wood make the fresh soil firm around the balls. This completes their first shift, and to prevent repetition, all future shifts are performed in a similar way. If the soil is in a proper condition as regards moisture, the plants will not require water for two or three days after being repotted. It is a bad plan to saturate newly-potted Pelargoniums. Their roots will take much quicker to moderately dry soil.

Continue the plants for a week or so in the propagating structure, then remove them to the greenhouse, placing them in a position as near the glass as practicable. After they have been here a few days, cut them back to four eyes from the surface of the soil. In most cases each eye will put forth a shoot, which, on attaining sufficient length, must be pegged down to the soil with hooked pegs for the purpose. In doing this, be careful not to break the shoots; they are liable to snap off at their junction with the main stem. It is therefore best to go over them several times, bending them down a little on each occasion until the desired position is attained.

About the first week in June they will require another shift, the large-flowering kinds into 8-inch and the fancies into 6-inch pots. A cold frame standing in an open position, clear of trees or anything that would prevent the plants receiving the full benefit of sunshine, will be the best place for them from now to the end of August.

To prevent worms entering the pots, stand them on inverted pots of similar dimensions.

As soon as they have started growing in the fresh soil, the large-flowering varieties must have their shoots cut back to within three buds of where they start from the main stem. These buds will nearly all send forth shoots, which must be kept neatly tied to small stakes, training the outside shoots as low as possible, keeping each clear of its fellow.

The fancies will not require cutting back at this time. In general they make a sufficient number of shoots to form the plants without undergoing this operation at present. Train their shoots as directed for the large-flowering kinds, and nip off all flower-buds as they appear. To induce well-matured growth, give abundance of air day and night. On fine days remove the sashes altogether, putting them over the plants again at night. By the first week of August the plants will require another shift. Give the large-flowered sorts pots 10 inches in diameter, and the fancies 8 inches in diameter. About the middle of the month the large-flowered kinds must have their shoots cut back to within two eyes of where they started from when cut back in June. The fancies should have their shoots shortened sufficiently to give symmetry to the plants, but they will not require cutting so hard back as in the case of the large-flowering kinds.

After being cut back the plants will require little water until they have put forth fresh shoots. The first week of September they must be taken back to the greenhouse. Give them a place near to the glass, each plant standing clear of its neighbour. The fancies should have the warmest end of the house, and they should not be exposed to currents of cold air during the winter. If their shoots become crowded, thin them to the desired number, remembering that a less number of stubby well-matured shoots will produce a better result than a greater number not properly developed.

If intended for exhibition in June, the plants must be got into their blooming-pots not later than the first week of January: 12-inch pots will do for the large-flowering kinds and 10-inch pots for the fancies. The shoots will require their tops taken out at the same time, remembering to operate on all of them.

If not wanted to bloom until July, the second week of February will be time enough to repot them and nip out the points of their shoots. As the shoots lengthen, keep them neatly tied to stakes, bending the outside ones down close to the rims of the pots, so that, when in flower, the plants will present in shape half a ball equally flowered on all sides. When the plants commence flowering they must be shaded from sunshine which will improve the look of the flowers,

and cause them to continue longer in bloom than if shading was omitted. As soon as the blooming season is over, the plants must be set out of doors in the full sunshine. Remove some of the largest leaves, and gradually reduce the moisture at their roots. This will cause the wood to ripen previous to their being cut down, which should be done not later than the second week of August. After being cut back the plants should be set in a cold frame, where they can be protected from rain, as they must have no water until the eyes have started afresh. As soon as it is seen that they have done so, the plants must be turned out of the pots and the balls reduced to about one-half their present size, so that they may be got into as small pots as possible, using the same kind of compost as before. Their future treatment must be the same as described for young plants.

In conclusion, I recommend the grower of Pelargoniums to observe the following hints. Never water them until they really require it, and then give sufficient to thoroughly moisten the mass of soil in the balls. Keep them at all times free from green-fly. Fumigate them just before the first flowers open, whether you can see any appearance of green-fly or not. Keep them as near the glass at all times as you possibly can. Wet their foliage as seldom as possible. When the blooming pots become filled with roots, set them inside of others a size larger: this will prevent the roots from getting injured through the sun or dry air acting on the outsides of the pots in which the plants are growing. As soon as the flower-buds appear, assist the plants with manure-water at every second watering. Let the water be of the same temperature as the house in which the plants are growing.

J. H.

BRAYTON.



FLORIST FLOWERS.

THE PHLOX.

THERE are several distinguishing features presented in the various types of the genus *Lychnidea* (Phlox), which has determined them as species: for example, *Paniculata*, from its paniced inflorescence, introduced to this country in 1732; *Suaveolens* (sweet-scented), has white flowers, introduced in 1766; *Pyramidalis* (pyramidal-formed trees), introduced in 1799. Then there is *Ovata* (oval-leaved), introduced in 1790, and other forms. They are all natives of North America.

The Phlox is doubly valuable, first when considered as a border-plant, and next its adaptability for conservatory embellishment. By either mode of culture a continuous succession of bloom may be sustained for months with little trouble.

Like most plants that have been taken into the fostering care of the florist, no efforts have been withheld to develop its best attractions year by year; each

type has been superseded by its own offspring, every generation claiming superior rank to that of its progenitor, until now not a few of these types approach perfection.

Hints on general Outdoor Culture.—The Phlox will live and flower under almost any system of culture, and the worst of treatment it sometimes gets; but to make it most attractive it requires liberal culture. The proper requisites to this end are, a deep, well-trenched soil, rich in manure, the subsoil effectually drained—shelter from boisterous winds—the surface of the soil regularly stirred and kept open. The position ought to be sheltered, so that the foliage is not injured by cold winds. Sunshine and ample supplies of water are required should a course of dry weather set in while they are growing actively; moreover, when the plants are disposed to throw up numerous shoots, thin them out to, at most, four of the stoutest, when the plants are well established in the soil. By this means the entire energies of the roots will be concentrated into the growths left, which will add wonderfully to the size of the flower-spikes. See that the growths are well supported by stout stakes, when they have reached a few inches above ground. Weak plants ought to have all the flowers pinched off excepting the strongest stem; perhaps this will encourage lateral growth on those denuded of their flowers, and it is also a means to stimulate fresh root-action.

Propagation.—This is effected in different ways, by seed, by cuttings, and division of the roots. Seeds are sown in pans in the autumn, and the seedlings potted, as soon as they are large enough to handle, into small pots. They ought then to occupy a shelf near the glass throughout the succeeding winter, and by March they will have arrived at a state sufficient to warrant their being planted out.

Cuttings should be gathered immediately after flowering in summer, and potted at once in threes around the edge of each pot. The soil for this purpose should be light, with a fair admixture of sand and leaf-mould. Water copiously and have them plunged into a spent hotbed, shading and keeping them rather close and moist for the succeeding ten days, especially in sunshine. When it has been ascertained that roots are in formation, dispense in a measure with glass covering and other means of protection unless the weather prove unfavourable. When the roots are sufficiently advanced to warrant the separation of the plants, have them potted singly into small pots, plunging as before in the open frame.

Subsequent treatment of the Plants.—Considering first their wants over winter, allow them just to occupy the cold pit or frame; the only protection—if any be required—is a mat, in addition to the sashes, in extreme frost. Do not let them suffer for want of water, nor from over-doses, only keep the soil in a natural condition of moisture. Ventilate on all occasions of mild weather, and guard against starting too soon by permitting the sashes to be kept close in time of sunshine.

Early in March is a good time to plant into their permanent places out of doors, provided the soil is favourable to planting, and the air free from frost. If it be intended to have beds, allow 2 feet between plants both ways; but should it be the desire to plant into the borders, the proper place for them is either the back line or near to it, in preference to putting them too close to the front. It is best to plant early sorts alternately with the late ones along the length of the border, distributing them so that the latest varieties are nearest the back line.

Indoor Culture.—What makes the Phlox really invaluable is its appropriateness

for indoor display ; in short, no conservatory should be without a few in summer. They are extremely simple in their wants, cultivated in pots ; but what is especially essential is to allow pots fully above the average in size, as a healthy Phlox is furnished with an extraordinary number of roots. It is not necessary to pursue the plan of giving successive shifts, but rather pot into those in which they are intended to be flowered, using a compost of three parts light fibry loam, adding a fourth well-reduced cow-manure, and a moderate amount of sand to make the compost porous. Drain sufficiently by means of broken pots, covered with a rotten turf to prevent the soil mixing with the drainage. Turn the plants out of the pots when about to give this final shift, and separate the cramped roots with the fingers before potting. If the roots are very long cut back the longest. Stake to prevent the stems being broken if they are at all advanced. Water well, and give a temporary protection in cold frames until they have made some progress in rooting. Especially guard against cold winds and frost ; let them have all the sunshine at command, and plenty of air ; never permit them to flag for want of water. All the foregoing hints ought strictly to be followed or the under foliage will be sacrificed, and along with it one of the best features of the plant.

A little manure-water is of much importance when the flowers begin to form, which should be always given them up to the time the flowers begin to open. At this stage the plants are ready to be placed in the showhouse.

SELECT LIST (EARLY-FLOWERING).

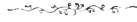
Lady Napier, white, extra form and richly fragrant (new). William Paul, brisk deep rose, solid and fine (new). Miss H. C. H. Ritchie, glossy white, eye bright dark rose, fine spike. White Lady, of the purest white, without a stain, flowers solid, glossy, and perfect, enormous spike, keeps its foliage to the end. Miss Baillie, shaded white touched with rose, fine spikes. Mrs Hunter, flowers French-white, with a bright purple star-like centre ; the veins are prominent on the upper surface of the petals, affording the flower a solid look ; pips immense size, of perfect outline, with excellent spike. Mrs Ballantyne, white, with neat delicate rose eye, extra. Her Majesty, pure white, highly fragrant, and otherwise first-rate. George Goodall, rose lilac, great flowers, and fine spike. John Baillie, deep rose, shading to purple, good flower. James Neilson, rose purple, large crimson eye, good spike, extra. Roi des Blanchés, a most excellent white.

LATE-FLOWERING VARIETIES.

Dr Masters, delicate rose, rich crimson eye, extra (new). Philippa Penglase, flowers pale purple, with blazing pink eye—splendid in pots ; a most lively variety. Mrs Dombain, white, with glowing crimson eye, in every way one of the first. Rosy Morn, a charming distinct peculiar shade of rose, beautiful, compact, extra large spike, and flower very dwarf and compact, retains its fine foliage to the end. Shirley Hibberd, shining carmine with deeper shades, splendid flower and spike. Princess Louise, white suffused with blush, large purple crimson eye of star form, distinct and good. Mrs Laird, rose lilac, has a delicate pleasing effect, flowers handsome and perfect. Miss Macrae, white, deep crimson eye, fine. Ange Gardien, paper-white, solid in texture, splendid spike, extra in pots. Chanzy, rose lilac, very large and fine shades of crimson in some instances present around the margin of the flowers. Comte de Lambertye, violet red, purple centre. Madame Bonnaire, flowers large, of perfect symmetry, solid and glossy, colour brilliant purple crimson, retains its foliage

to the last in pots. Madame A. Verschaffelt, colour carmine rose, with deeper carmine eye, produces immense trusses, and has a brisk lively aspect. Madame Kiomph, brisk rose, deep crimson centre. Mademoiselle Christine Nilsson, French-white, suffused rose, purple crimson centre. George Henderson, rose shaded dull lilac, purple centre, a novelty. Miss Melville, brilliant glowing light crimson, with deeper crimson eye, fine spike of extra good flowers. R. B. Laird, peach, with bars of delicate rose traced down the petals, one of the best in all its points.

A. KERR.



EARLY RIPENING OF LATE-KEEPING GRAPES.

No one, I think, can dispute the fact that late Grapes are better flavoured when ripened early in the autumn, or under a higher temperature than they are generally treated to, as has been forcibly argued by the Editor and Mr Henderson in last month's 'Gardener.' Anybody may convince themselves of this by testing the fruit of the Barbarossa or Trebbiana Grape when grown along with Muscats, and the same kind grown in a Hamburg or Lady Downes house. The difference in flavour is so great that they are not like the same Grape.

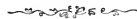
With regard to the Alicant and Lady Downes, however, though they too would doubtless be improved in flavour if ripened in August instead of September or October, is it certain that the fruit would keep better and longer? Experience on this point may probably differ; but after giving both plans a favourable trial, I have come to the conclusion that when these two varieties are ripened earlier than the end of September, the fruit does not by any means keep so well; indeed I will go so far as to say that in this respect it is safer to have them ripe by the end of October than the end of August. At one time I was in favour of early ripening, holding the opinion that a berry with its tissues well matured, and its footstalk hard and woody, must necessarily keep best; and in this belief I for two years had our late vinery here started considerably earlier than usual, and had the fruit ripe by the end of August. They were so well up, that I exhibited Alicants and Lady Downes in collections of fruit and Grapes that got the first prize at Worksop show early in September. I also exhibited the same varieties at Warrington and other places. I state this to show that the fruit must have been pretty well finished at that time. But what about keeping? Everything went well up till Christmas—the usual precautions being taken; no plants were stored in the house, and the inside border was covered with mats to prevent evaporation: but after the above date the Alicants began to shrivel at the points of the berries, and later on Lady Downes did the same. Damping also was worse than usual at this season, in spite of increased care and watchfulness; and, upon the whole, the fruit kept

much worse than ever it had done before. Unwilling, however, to believe that my theory was wrong, I started the Vines as early the following season, but the result was exactly the same when mid-winter arrived. Since then, we have therefore started late, and brought the crop on leisurely, generally getting the fruit ripe about the middle of October; and it has kept as well as could be desired. Last year (1872), owing to the absence of sun, the fruit was not ripe till the end of October, and it has never kept better. At this date, 12th of February, the half of the house (50 feet long) is hanging untouched; both Alicants and Lady Downes are plump and sound, and we have never had occasion to use the scissors less. We were sending in the yellow leaves off the Vines for garnishing the dessert at the New Year. This has been my experience; but that of my near neighbour here—Mr Batley, gardener to T. V. Wentworth, Esq., at Wentworth Castle, near Barnsley—is of a still more decided kind. Mr Batley is rarely an exhibitor, otherwise he would long ago have been conspicuous in the front rank of Grape-growers, for the crops of Grapes at Wentworth Castle are uniformly of high excellence; and the late house of Alicants and Lady Downes there is well worth going to see any time between October and March or April. This house has been cropped six years; and every year the fruit has been left hanging on the Vines until so late in spring that Mr Batley has not been able in many cases to prune the shoots where the latest bunches were hanging, for fear of bleeding; consequently some of the spurs are nearly 2 feet long. The house is shaded with mats in spring to prevent the rise of the sap while the Grapes are hanging, and the Vines are only started in a regular way, when they begin to move of their own accord; and Mr Batley informs me that the fruit is seldom or never ripe before the end of October—this I can vouch for personally. Though the fruit is allowed to hang so late every year, there is no diminution of vigour in the Vines, except in one or two instances, where the bleeding was severe on a certain occasion; and it is only moderate praise to say that, so far as I know, the crops, whether as regards size of bunch or general finish, are not surpassed anywhere, and the way the fruit keeps is a marvel. I saw the vinery the other day, and there did not seem to have been a berry cut out; and Mr Batley informed me they would probably be hanging just as plump in March on the Vines, or in the fruit-room in April, judging from his past experience. A few years ago—1868, I think—Mr Batley was induced to send two bunches to South Kensington on the 6th of April. They caused something like a sensation among the committee, were awarded a special certificate, and inquiries were addressed to Mr Batley by the Society, through Mr Barron, concerning his successful practice. Whether Mr Batley's reply

was published in the transactions of the Society, I cannot say. The two bunches were afterwards sold for £4. On another occasion, Mr Batley exhibited two bunches at the Barnsley spring show in April, which would probably weigh 4 lb. apiece at that time; and the berries were as plump, and the footstalks as green, as they were in October. In 1870, he sent his last bunch to table on the 10th of May, in fine condition even then. I cannot say how late he kept them last year, but I know his spare fruit readily fetched 14s. a-pound in spring, and some medium-sized bunches were disposed of at 20s. apiece. These few facts will vouch for the condition of the fruit, and are sufficient to show that late-ripened Grapes keep as well as can be desired. And last, but not least, all horticultural readers are acquainted with Mr Thomson's success in keeping the Lady Downes Grape till late in spring when he was at Dalkeith. I was under him at the time, and had charge of the vinery in question; and in referring to my notes, I find that the house was never started till the Vines were about breaking of their own accord, nor were they ever treated to a high temperature during the summer. If I recollect, Mr Thomson reckoned upon having the fruit ripe about the end of September or middle of October, and it invariably kept well. Such uniform experience is, I think, conclusive enough. Improved flavour is decidedly a desideratum of no little importance, but if it is at the risk of having shrivelled berries a month or six weeks earlier than usual, it would not pay; for when an Alicant or Lady Downes Grape begins to shrivel, no matter how good the sample may be otherwise, then Raisins are in every respect better for dessert. As regards the late hanging of the fruit being injurious to the Vines, as Mr Henderson remarks—and his opinion is entitled to the highest respect—I can only say, that after seven years' heavy cropping, followed by late hanging, our Vines here increase rather than diminish in vigour; and I can recollect, when foreman at Dalkeith, that the late Vines there went on increasing in strength to such a degree, that it was dangerous to tie the shoots off the glass in the first stages of growth—they were so apt to bound off, which is always a sign of vigour.

J. SIMPSON.

[Mr Simpson sent a bunch of his Lady Downes for our inspection on March the 10th. Their condition in point of preservation was excellent, and flavour good.—ED.]



SOMETHING NEW IN CELERY-CULTURE.

“THERE is nothing new under the sun;” but anything differing from the ordinary received ideas of things is styled new. And it is in this sense that I have ventured to say that it is possible that, even in Celery-culture, there may be something new.

There is scarcely any vegetable that has been so much improved by cultivation as this. It appears that, because it has been improved so much, gardeners deem it incapable of being further improved, at least so far as the mode of cultivation is concerned. I hope that few have come to that conclusion concerning anything. I for one have not.

After all, I have nothing new to communicate ; all I am to do is to give *one* suggestion which I have often revolved in my own mind, and which, I believe, if carried out with half the vigour which is applied to less profitable things, will prove so successful that henceforth many will adopt the plan ; especially those whose garden-ground is limited, and who are loath to sacrifice a considerable portion for such a miserable return as has been afforded in too many cases this winter.

How many amateurs have sown their seed, trenched their ground, dug their trenches, applied a liberal dressing of manure, ay, have so humbled themselves as to go down on their very knees to earth them up carefully, and when at Christmas they went to "draw the pay" for their labour, found first one, then another, rotten ; the third perhaps—perhaps not—just fit for use and no more ! And how many gardeners will groan in spirit when they think of all their labour lost, and the importunities of the cook or butler ! How few have sound Celery, fresh, crisp, and untainted, now (March 8th) ! And how many might have it now and long after this, superior even to that which is dug in October or November !

Will anybody believe me when I say that all may ? Or will anybody listen to the humble suggestion of an *under-gardener* ? "There, the murder's out." I suppose none of your readers will believe in the *sense* of an *under-gardener* [Why not ?—ED.] If no practical man will, perhaps some amateur will. I can make no experiments on my own account ; but I hope I will one fine morning find myself a "head-gardener, and then I will prove all things ;" and then I may be listened to.

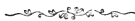
Grow your Celery in pots ! that is something like the suggestion of an unfledged "under-gardener." Pots indeed ! Celery in pots ! ridiculous ! It will take less trouble, and be far more satisfactory in the end—ay, far more profitable.

Try one dozen plants for once. When you put out your plants in your trenches select a few nice plants, pot them in a suitable compost, in a proper pot, give them ordinary attention (don't neglect water), and I venture to say that by the end of September or middle of October you will have nice, strong plants, which if bound up moderately firm with bast, and placed in any dry *dark* place, will throw up centre stalks, tenderer, sweeter, and in every way superior to those manure-flavoured, half-decaying stalks from your stereotyped trenches.

It will be less trouble too ; for in the time you will dig trenches, manure, plant, and water them, you will surely pot and water an equal number of plants. It will be more profitable, for you can grow them in pots where nothing else will, or you can lift them from one place to another, so enabling you to crop the place which otherwise would have been devoted to Celery (a great point in limited places) ; and more, you will be able to keep frost, damp, slugs, and a host of other things away from your plants, and so be able to secure *all* your crop of Celery, instead of perhaps only a sixth—and that, too, in finer condition, and to a later period, than in the ordinary way. I do not say abolish your beds and trenches. I would still follow the most profitable old way of raising *early* crops ; but for crops to keep up a proper supply from Christmas and after, I am convinced that by a method similar to that I have ventured to suggest, it can be done with far less trouble and with far better results. Will any one try, and at the end of the year state whether one score of plants grown and blanched as I have suggested does not prove equal to at least sixty in the open trenches ? and surely twenty in pots will take less trouble to bring to perfection than sixty outside. Twenty in pots will be equal to sixty in the trenches, because you cannot count on more than one sound one in three by this time, after such an unpropitious winter. I have scarcely ventured to lay down a rule, having no doubt that any one will be able to suit himself best according to circumstances.

Should any amateur, however, be anxious to adopt the method (and it is chiefly for such that I recommend it, for many amateurs have little spare ground to risk, and may still be desirous of having Celery all winter through), and be desirous of knowing how I would proceed, I will be most willing to lay down a rule whereby any one who follows it, may assure himself of success.

UNDER-GARDENER.



THE USE OR ABUSE OF TUBS AND BOXES FOR TREES.

THE art of gardening is so often called in to make objects not only look their best, but often also to make them look what they are not, that it becomes a question how far such a course may be safely followed. By clear combinations, effects are often produced which at first sight would appear incredible : even apparently small matters often give great results.

I have been led into this train of thought by musing on the effect produced on terraces, on broad walks, and on the more severe and formal class of flower-gardens, by the liberal introduction of Orange-trees, trained Portugal Laurels, Bays, and many others, in tubs or boxes—sometimes the tub or box being the more ornamental part, a fact certainly not creditable to gardening. These scenes are highly artificial ; and the introduction of these prim, formally-trained trees is in perfect keeping with the surroundings. The point I wish to come to is this, Do not the tubs mar the whole effect ? and if so, why retain them as at

present? Or if they must be retained, why not employ means to prevent their being an eyesore? Two modes present themselves to my mind for obviating the difficulty; one is by having pits sunk in the walk, deep enough to admit the tub or box out of sight. These pits would require a drain, and to be bricked round the sides, say a foot wider all round than the tub or box to be put in: this would admit the action of air, beneficial alike to the tub and the roots and soil it contained. One great gain would be the saving in watering, the direct action of the sun being prevented; but the primary object would be the more natural appearance of the trees when seen growing as it were from mother earth, instead of something propped up about it. The great objection to this plan is the present mode of training such trees—they are too short in the stem; but were the idea taken up, long stems would soon be supplied by our enterprising nurserymen.

Another mode of hiding the tubs and boxes; instead of standards, let the trees be grown as cones or pyramids, the lower boughs neatly trained down so as to cover the tub entirely. Why should these trees invariably be standards? From the simple fact that we have derived the idea, and the association in our minds, from the Orange, which was first used for this purpose, being generally grown as a standard; but that is no reason why the pyramidal form might not be used with advantage in training Portugal Laurels, and other substitutes for decorative purposes.

S. X.



LATE GRAPES *VERSUS* LATE HOUSES.

YOUR correspondent, A. Henderson, Thoresby Gardens, has brought the above subject to the front in a very practical manner; and being backed by the leading article in the February number of 'The Gardener,' cannot fail to produce good results respecting late Grapes *versus* late houses, when the system is now more or less adopted in relieving the Vines of their load of Grapes, by cutting them off and inserting them in bottles of water, with a bit of the branch or spur attached, as is generally understood, and placing them in rooms with a dry atmosphere. But whether the Grapes keep or not, the Vines can now be pruned, dressed, and the house cleaned, ready for a fresh start according to the time the Grapes have been cut and bottled off. The house will now in an ordinary way be ready to begin with the season, which will be at least a month or six weeks sooner than if the Grapes had remained on the Vines until used up, at the same time preventing a good deal of unnecessary bleeding, although it can be greatly prevented by styptics: and, better still, when the cultivator is anxious to bridge over the season, by leaving as short a gap as possible between his old and new Grapes, by clearing off a few bunches, or even a whole house. The consideration appears to be of small importance, considering what is done upon the Continent with late Grapes. From reports, this whole late cutting and bottling of Grapes has not been attended with all the desired results in several places in this country. In many cases, the system being new, the accommodation may be questionable; but whether or not, it brings me to the gist of the matter so ably propounded by Mr Henderson, to begin late-keeping Grapes early, so that they will be thoroughly ripened by the end of September. Late houses should be planted with early sorts, to be used up with the season, as it is utterly impossible to keep badly-ripened Grapes during winter, either in bottles of water or in the houses where they have been grown. Now, to steal a march on the season, a house of late bad-keeping Grapes would

just keep as well in any dry room as in the vinery, and save the expense of burning coal, even if there was not a plant in the house; when the Vines could be pruned and cleaned as already mentioned, and shut up, and in due time start with the season; and by the end of February or the beginning of March, if everything is right, it takes very little trouble to bring the bunches in sight, if they are forthcoming; when the fore horse requires to be taken by the head, as it were, and guided through the vicissitudes of our changeable seasons, and landed safely ripe in September. And now as to temperature for Muscats or late-keeping Grapes. We all admit that they require a somewhat higher temperature than Black Hamburgs, &c., that being easily attained by starting the different sorts as mentioned above, and keeping them close to their work during the fore part of the season, while the sun has power. It saves a great deal of anxiety for Muscats and Frontignacs thinning themselves, at the end of the season, from a little gangrene, close by the footstalk of to all appearance well-ripened berries, similar to the Madresfield Court at some places.

I am of the same opinion as Mr Henderson respecting Madresfield Court, Mrs Pince, Alicant, Lady Downes, and Barbarossa. They all require a higher temperature, or at least they require of us to make the summers as long as possible for them, in order that they will stand good against our damp climate under all circumstances, either in an unsuitable room or in a vinery crammed full of bedding-plants. The months of December and January are the most trying months for badly-ripened Grapes. If they are nothing more than bags of sweet water, they soon succumb to dampness, when all the care of cutting out decayed berries will not save them. Such a lot of Grapes cut and put into bottles, and placed in a dry room, would sooner or later come to grief.

I once cut a house of pot Grapes in the end of May, and hung them up in a dry room in order to take in the Vines which belonged to the house, as they were showing their bunches as they lay on the border outside. From the above pot Vines, after keeping them in moisture about ten days or a fortnight, I took my two first medals at a June exhibition, Regent's Park; and as they were not kept in water, I mention the above facts to show that well-ripened Grapes will generally keep well under most unfavourable circumstances.

Here at Worksop Manor I have got two late vineries—viz., a Muscat house and a mixed house of late-keeping sorts, heated upon the old principle of flues, but the best arranged that I have seen, and I think the cheapest at the present price of coal. The mixed house contains the following sorts: Black Hamburg, Alicant, Madresfield Court, Mrs Pince, Lady Downes, Black Prince, Trebbiana, —and a stranger, I know not what, but a good one. This house is generally started some time after the Muscat house, and to all appearance the Grapes finish off equally well with the sorts in the Muscat house. But not so when December comes—I am obliged to dispose of them, as they show signs of decay; where in the Muscat house now I have Lady Downes as fresh and plump as they were in September last, with scarcely a decayed berry in any of the bunches. Both houses at present are alike filled with bedding-stuff in boxes, but the watering of the bedding-stuff in this house very little interferes with the keeping of the Grapes. One of the principal things in ripening Grapes is to retain plenty of healthy foliage, and beginning early with late-keeping Grapes as Mr Henderson asserts, when none need fear to keep late Grapes in bottles or vineries.

J. MILLER.

WORKSOP MANOR AND CLUMBER.

[Our experience is, that Grapes keep well enough in bottles, but they lose much of their flavour as compared to those left on the Vine.—ED.]

CURCUMA.

THIS genus of plants has been sadly neglected although of the easiest culture, and beautifully ornamental. I feel perfectly satisfied they will make fine subjects for the dinner-table—if not for exhibitions.

Curcuma cordata.—Has bold, oblong-lanceolate foliage; the flower-spike 18 inches or more in height. The bracts are more like deep pouches, and are arranged around the spike in five rows. The bracts are green, the upper ones deeply tipped or margined with violet purple, and from each of those pouches a deep yellow flower is thrown up at intervals.

C. Roscoeana.—Many may prefer this to *cordata*. It also has bold, lanceolate leaves, perhaps not quite so broad as in the case of *cordata*. In other respects it is similar, excepting the colour of the bracts or pouches, which are of a bronzy yellow, and the flower lighter yellow. It is a very interesting plant.

C. petiolata.—This is a lovely species. If not new, I believe it has been lost, and recently reintroduced. It also has bold arching leaves, with fine spikes of flowers. The lower bracts or pouches are greenish white, tipped with rosy pink; the upper ones are deeply tipped and margined with rosy magenta—a very beautiful plant.

The next I shall name—not particularly for its flowers, but for the decorative effect of its leaves—is *C. rubricaulis*. This I have always grown as a foliage plant. The leaves are from 5 to 7 feet, or more, in height, according to strength; the whole stem is of a deep red crimson colour, running through the midrib of the leaves, which are long, moderate in breadth, and lanceolate, forming a very elegant plant. If confined in 6 and 8 inch pots, they are very useful for table decoration, and also by putting many tubes together, as you would a *Caladium*. This would make a fine plant in a collection of foliage plants.

The soil which suits these plants best is a rich fibrous loam, and peat or vegetable mould and rough sand, similar to what one would recommend for a *Caladium*.

Propagation is effected by dividing the tubers in spring. They like liberal culture, plenty of good soil and water, and moderate heat. If required late in autumn, give an additional shift;—perhaps the same plant will flower twice or thrice, or oftener, in one season. When they show signs of going to rest, dry them off gradually, and lay them under the stage on their sides on inverted flower-pots, to keep them from damp, but not too near the pipes. A good time for starting them is about March, when they should be shaken out of the old soil, and potted in rather small pots.

T. B.



MADRESFIELD COURT GRAPE.

IN reference to the several questions that have arisen of late concerning the above Grape, permit me to give the few truthful and positive facts which have presented themselves during my experience with it. In so doing, it is not with the intention of raising any further discussion upon the merits of the Grape, or in any way to oppose or question the statements made against it by our able and worthy contributor, Mr Cramb, and others, but simply to state how the Grape has done with me, as reference has been made to this place.

With me, I assure you, Madresfield Court has not as yet merited the somewhat severe and perhaps rather hasty stigma given by Mr Cramb in the 'Gardener' for August 1872. I have it planted in an outside border, at the cool end of a Muscat viney, which I think is the proper place for it, as I find

a moderately high temperature suits it best to bring it to perfection ; while at the same time it does exceedingly well under a cooler treatment, by the side of our more general varieties, as I have several Vines of it planted in a late vinery with inside border. I have not as yet seen in either cases any sign or trace of the spotty gangrene spoken of by Mr Cramb and others. Since the first time I saw the account of the spot taking it, as described in the 'Gardener,' I have been on the alert for it, but am pleased to state that I have not seen anything of the kind. Should it visit me during the forthcoming season, I will at once inform the readers of the 'Gardener.'

I find it to be a very free and vigorous grower, bearing large and well-shaped bunches, setting as free as the Black Hamburg, with fine berry and colour, being of good flavour when fully ripe. This I believe Mr Cramb can testify, from the specimens exhibited by me at the Cardiff exhibition in August last, and which he had the opportunity of judging, the three bunches in question weighing 12 lb. 7oz., cut from a Vine bearing ten bunches, averaging 3 lb. per bunch. Not that I wish in making this statement to speak in laudatory tones of the specimens exhibited, or either to have the merits of the Grape belauded or based upon it—decidedly otherwise,—but simply refer to them as showing how the Grape has behaved with me. As a late-keeping Grape I would not recommend it, but as an intermediate or midsummer Grape it is with me all that can be desired. I quote the following notes taken of its keeping qualities,—on the 18th of October I cut it in good condition, and the remainder I cut on the 14th of November, somewhat shrivelled. Its not being a late-keeping grape does not affect its character as a good useful Grape of fine appearance and flavour for its time. May not the evil experienced by Mr Cramb and others arise from untimely ventilation? There are cases "not a few," I believe, when congratulating ourselves upon careful and tender nursing in the way of a well-heated heavily-moistened atmosphere, that we are at the same time fostering the enemy, assisting it in its lurking depredations till too late for any practical remedy; but as Mr Cramb has wisely stated, time may solve the present difficulty, and which I think ought to be solved in the case of our new Grapes before they are sent out to the public.

I would just remark by way of explanation regarding the two stands of Grapes exhibited by me at the Cardiff exhibition referred to by Mr Cramb, p. 39, for January, could I have had my own way, the two stands would not have been exhibited; but being to some extent obligated by the desires of my employers, and having written to the committee as to its being in accordance with their rules, permission was granted: hence the result.

I fully concur with Mr Cramb that such proceedings press heavily upon brother gardeners having perhaps less means; but still I would inform Mr Cramb, with all our means we have no particular choice in the matter, as the Grapes Mr Cramb sees every year at Cardiff are cut from the same Vines year after year, and from the one vinery, the other vineries being started very early and very late.

HY. BERTRAM.

CYFARTHFA CASTLE.

KEEPING CUCUMBERS.

THE Editor gave us such good practical hints as to the cultivation of the Cucumber last year, that I can only add—be guided by him, and you are almost sure to meet with success.

I have no doubt there are many who, like myself, have to send their garden produce to London once a-week while the family are in town. I consider it injurious to the plant to allow the fruit to remain on it after they are ready for use, and it would soon be too old; therefore I always cut when ready, and lay them in common drain-pipes 2 feet long, or in a chimney-pot. These are buried in a heap of earth, a piece of slate being stuck at each end to keep out the soil; and when required, they are as fresh as if just cut. I have often kept them this way a fortnight.

Last October and November, I had some buried in dry earth, where the rain could not reach them, three weeks, and they were then fresh and good. I have tried various other plans to keep them, but have found none to answer like this one.

W. NOKES.

ACACIA RICEANA.

ALLUSION being made in your January number to this fine hard-wooded plant by "W. S.," with your permission I would say a few more words in its favour. It is without exception the most graceful and useful of the genus *Acacia*; for not only is it so in a flowering state, but from the time the young growths arrive to maturity in May, till it opens its flowers in March and April, its beauty and utility is continuous. I have sent you a branch of it, which will give you an idea of what great use it may be put to, and more especially in large establishments where large quantities of floral decoration are constantly wanted. I find nothing so effective for fringing a nosegay as this: forming a ground-work for other flowers; hanging gracefully from candelabra on the dinner-table; Christmas decoration for fringing miniature or family portraits—for it has the rare quality of standing fresh and living-like without water for a considerable time—and a hundred other ways that will readily occur to the floral decorator. It is raised from seed, but it must previously be soaked in boiling water; warm water is not sufficient. An Australian friend sent me some *Acacia* seed, and with this piece of information—"Pour boiling water on the seed before sowing, or you sow disappointment."

H. KNIGHT.

FLOORS GARDENS.

[A very elegant and useful plant.—ED.]

EXHIBITION ZONAL PELARGONIUMS.

Now that this fine class of plants is getting much attention in many gardening papers of late, I beg to offer a few remarks as to the best varieties to be grown for the above purpose. The immense quantity of seedlings raised yearly is all but causing confusion, and in many cases disappointment. True, gardeners are very slow in discarding any good variety to make room for new ones, unless they prove its qualities to be better than those they have been growing. Nevertheless there is an immense improvement of late in this class of Pelargoniums, more so than in the Tricolor class. All shades of colour are now well represented. Only a few years back, when Christine came out it made a sensation in the bedding department, just because its colour was what was wanted at that time; now it is not worth house-room as compared to the following: Mrs Wm. Paul, Zaidée, Mrs Keeler, Helen Pennington, Blue Bell, &c. Madame Vaucher

was then the best white bedder we had, and is still a good pot-variety, to which this paper especially refers; but it has been supplanted by White Wonder, White Tom Thumb, Purity, Virgo Maria, &c. The latter is the largest trusser of all this class. All other colours have been much improved. I subjoin a few select varieties, giving quality of flower the preference, I mean the broad-petalled varieties: Mrs H. Cannell, an improvement on Madame Werle; Mrs Keeler, an improvement on Mrs Wm. Paul; Helen Pennington, rose pink; Chilwell Beauty, purple magenta; Eclat, rich magenta; Leonidas, bright red; Hydrangea, deep rose lilac; Monster—this is a great improvement on Lord Derby; Climax, bright rose; Salmon, clear white eye; Aeme, flame scarlet, the edge of the petals shading off to pure white; Titian, orange scarlet, clear white eye; Virgo Maria, pure white; John Hopper, soft rose scarlet, a great improvement on Roi d'Italie; Shakespeare, bright red—the individual flowers of this variety measure 2 inches in diameter. If any of your many readers of the 'Gardener' know of any Zonal Geraniums with larger individual flowers than those mentioned above, I will be glad to hear of them through the 'Gardener.'

J. T. BURNS.

MIDDLESBORO'-ON-TEES.



MYSOTIS DISSITIFLORA FOR FORCING.

FEW who have not seen this elegant little flower, the blue Forget-me-not forced, can have an idea of what a pretty pot-plant it makes for the conservatory, drawing-room, or dinner-table. It is also a most useful flower for cutting for bouquets or button-holes. Those who admire this simple plant—and who does not?—need not think, because they have no glass, that they cannot force it,—the only difference between doing so in a room and the greenhouse being, that in the room it will take just double the length of time to come into flower it would in the greenhouse, which is about six weeks from the time it is potted and brought into heat. So according to where you are going to grow your plants you must make allowance as to the time they will require to come into bloom. Take some nice tufts—I prefer those that have sprung up from the seed dropped the season before—and pot them in 5-inch pots in a nice mixture of loam, sand, rotten turf, and a little peat if you have it. Give them plenty of water and air whenever the weather will permit. Those who want to grow this plant for cutting, can plant as many tufts in each pot, and use any size they like; or it will grow as well in boxes as in pots. Indeed it is far from particular; but its pretty flowers and appearance, as well as the length of time it will remain in bloom, will quite repay those who may take the trouble of forcing it. A succession of flowers can be obtained by keeping the first flower-buds picked back.

A. H.

UPPER NORWOOD.

GARDEN MEMORANDUMS.

A DAY or two's "outing" in the middle of winter by some may not be considered a great treat, especially when cold winds, frost, and snow prevail; but when one has a purpose in view, difficulties are easily surmounted; and travelling in the railway carriages, which are now becoming proverbial for their comfort, as much as they were noted for their discomfort a few years ago, and the usual attention to creature comforts of an important nature, one can enjoy a holiday in mid-winter; and so we thought about the middle of January last when passing through the lower parts of Oxfordshire and Berks, where a large tract of fine lands was under water, and boats in some parts apparently let for hire, as great numbers in rows were closely packed together in full sail, awaiting pleasure-seekers.

Leaving this behind we sped rapidly to Woking, in Surrey, *en route* for the far-famed Knap Hill Nurseries. Passing from the railway station we turned in by a pathway along by a canal for nearly two miles, and turning up to the high-road, a fine large building attracted our attention, and as we got nearer it became more interesting, and at last became painfully so, as it turned out to be a convict prison. A large "team" of bipeds were drawing manure, all being apparently chained to the cart. The poor fellows often appeared to stick, the wheels sinking deeply into the mud; however, they rested a few moments and at it again. The warders in their dull blue clothing and rifles, guarding each side of the unfortunate string of men, walked leisurely, looking apparently carelessly on. Further on the road, we came up to another "team" drawing coals, probably for the prison supply. The countenances of the men seemed to show that common humanity had not left these unfortunate mortals—sadness, if not repentance, was stamped on them all. One old white-haired man, who had been apparently living in easy circumstances, turned away his head as I passed, as if to hide his grief; there was no help but draw on, with the rifle close to his ear.

By this time "nursery stock" could be seen not far off, and I soon began to look for an entrance to the nursery of Mr Anthony Waterer. The first thing that took my attention in the way of plants was a number of Rose-stocks neatly placed in rows 2 feet apart and a few inches between each stock. Each row was kept to a uniform height, and probably colours and sorts would be arranged in the same systematic manner. A number of men were planting, and I should suppose that there were already in the ground some tens of thousands. It would appear that the taste for Roses was increasing, or great numbers must be destroyed annually. Passing in through the nursery-gates, along Yew-covered walks, leading through almost endless ranges of pits and other low structures, apparently used for the propagation, protection, &c., of shrubs and trees, I soon found Mr Waterer, a gentleman in possession of one of the largest and best-stocked nurseries in the world. One hears of great gardening sights which often are found on paper only; but these nurseries are far beyond anything I had previously conceived. They contain about 270 acres of shrubs, trees, and everything else of an ornamental character for the decoration of gardens,—Hollies, Rhododendrons, and Conifers in magnificent specimens, all lifted and relifted, preparatory for planting, as perhaps the principal features; all being planted for effect even in the nursery-grounds.

Attention to economy may be observed; single specimens of standard Rhododendrons at good distances apart were placed in, so to speak, carpets of dwarf healthy plants. Specimen Hollies (Golden Queen, Waterers, Silver, &c.) are in large breadths, and often forming boundaries to other shrubs which are grown

in quantity. The perfect specimens, both in regard to health and shape, are very striking; many of them I believe about 30 years old, and have been often lifted to suit removal without injury. Many nice specimens of *Cupressus Lawsonia erecta* were in fine condition, and this variety is a great favourite at Knap Hill.

Mr Waterer called our attention to one brake of Hollies of sorts shaped as pyramids, and standards with globular heads, some feathered to the ground, others like massive domes, all perfect specimens. Some of the "cream" of the stock were here, over 1000, all averaging from 6 to 10 feet high and as much in diameter. Close to this were 6 acres of specimens a size less but equally handsome, probably averaging 6 to 10 guineas in price, but cheap to the buyer. We passed through a large open quarter in which were planted 50,000 *Lilium auratum*. Standard Yews, golden and plain, are grown in equal proportion to the Hollies, &c.: all sizes and shapes are to be seen, many of the stems furnished as green pillars with golden heads.

The grand avenue, about a mile in length, is amazingly fine, being belted with specimens planted for effect, not too stiff and formal, but relieved with *Cupressus*, *Cedrus Deodara*, *Wellingtonias*, &c., standing out in bold relief. At each crossing fine Hollies were placed as golden pillars; and one feature worthy of notice was a Fir of considerable size loaded with a *Wistaria* all entwined through its branches, which must be a grand sight when in full flower. A long border by the side of a hedge was clothed with double yellow primroses blooming profusely, splendid objects for hardy flower-gardening: they were offered to us at the come-at-able price of 75s. per 100. We retraced our steps, sorry that our time was so short in this splendid nursery, but feeling we were amply paid for a journey of over 100 miles. We took the train to London, thence to Barnet, visiting Mr Cutbush's nurseries, which have so long been favourably known for the fine collections of specimen greenhouse plants cultivated there. There is about an acre of glass filled with excellent stuff, clean, healthy, and kept in fine shape. *Aphelaxis*, Heaths, Camellias, *Epacris*, *Barosmas*, *Chorozemas*, and a number of the free-growing winter-flowering plants, seem to have a large share of attention from the increasing demand.

Pot-Vines are among Mr Cutbush's specialties. His stock is always fine; and one of the secrets of getting such finely-ripened canes, Mr Fancourt (the able manager) told us, was by very slow forcing in their young stage, and when they had made plenty of roots they are driven along at rapid pace in the long days, completing their growth early, and allowing a long period for ripening and for rest. Stove-plants were very clean and healthy, growing in a very low temperature.

The nursery-grounds were well stocked with shrubs and general stock, but we had time to inspect very little of it. The great breadths of Hollies surely indicate that the demand for these plants is greatly on the increase. This nursery produces splendid Roses, the soil being strong and deep. Among the specialties are fruit-trees and Mushroom spawn. The latter is sent in great quantities to all parts of the British Isles; and like his brother at Highgate, Mr Cutbush is favourably known for his large trade in bulbs. Leaving Mr Cutbush and his kind hospitality, we made a hurried visit to an old friend whose value to lovers of plants is well known, but not so widely as the splendid contributions he sent home from Brazil and elsewhere, while collecting for the Horticultural Society of London. We refer to Mr John Weir, who lost his health and almost his life while sailing down a South American river. He now lives at Hadley, near Barnet, deprived of almost all physical power, but with an intellect as bright as ever, and a heart as warm as

we knew it, by experience, to be twenty years ago. This is one of the cases which we would not consider it to be wrong if dealt with by the State, and means allowed for the support of those who have given what was dearest to them in the world (their health) for the benefit of science and their race. Wishing that we had more time to spend in the locality, we beat a hasty retreat and took train to London, visiting Covent Garden with the view of comparing notes.

We have seen some things at the season much finer in the market, but never saw quantities larger. Fruits consisted of some fine Pears, showy Apples, Grapes plentiful, but with the exception of some Alicants and Gros Colman, the others were unfit for use. The quantities of wretched small Pines with huge crowns showed that the growth of inferior fruit was not out of date. There were a few good Cayennes and Black Jamaicas. Asparagus was poor, French Beans very few and "seedy." Seakale was plentiful but moderate in quality. Common vegetables were good and plentiful. Cut-flowers abundant, consisting chiefly of Camellias, Roses-Devoniensis, Souvenir de Malmaison, Gloire de Dijon, and others of that class mostly in bud. Lily of the Valley, Violets, Poinsettia, and bulbs of sorts.

After seeing all that Covent Garden exhibited to public view, our next route was to the nurseries at Fulham. This "firm," so long and favourably known for its respectability, is conducted much on the same principles as when the late Messrs Osborne were at the head of the affairs of the business. An excellent manager has been secured, and the various departments are each well managed; we thought the stoves and greenhouses were never in better order. Great quantities of plants fit for table-decoration were in robust health and very clean. The demand for these plants seems on the increase. The young stock of Heaths was in very fine condition. Though every garden requisite is kept in stock at the Fulham Nurseries, the feature which has so long distinguished this fine old business is the unrivalled stock of fruit-trees, which are in as fine condition as ever; and we were pleased to see the veteran Mr Pitman, though marked with the shades of time since last we saw him, as active and enthusiastic among the fruit-trees under his charge as ever he was. He may have equals as knifemen, though we have not met them, but it is hardly possible that he can have a superior in the art. It was gratifying to know that this nursery business is prospering though deprived of its two leaders last year under melancholy circumstances, and that the widows and children are substantially provided for, though nothing in a tangible form can make up for the loss of an excellent father. Leaving Fulham we intended visiting Veitch's Exotic Nurseries, but the want of time prevented us enjoying a peep of this the finest plant establishment in Europe, and we could only glance over the vast ranges of glass as we passed along on the 'bus; but we had a run through this establishment two months ago, and the quantity and quality of every plant worth growing are still maintained in all their excellence; and we may say that this nursery holds the same position for its exotic plants which Knap Hill holds for its hardy shrubs and trees. We returned to Oxfordshire much refreshed by sight-seeing; and when employers send their gardeners out for a gardening tour, we consider it advantageous to both parties, and money expended in this way by considerate employers is generally returned to them with interest in another form.

M. TEMPLE.

BLENHEIM.

Obituary.

WE regret to have to record the sudden death of Mr Jabez J. Chater, of the Gonville Nurseries, Cambridge, which occurred at three o'clock on Wednesday morning, March 19, from heart-disease. The deceased was the fifth son of Mr Wm. Chater, the celebrated raiser of prize Hollyhocks; and it is not too much to say, that to the deceased may be attributed a good deal of his father's success with that grand flower. For the last ten years Mr Jabez J. Chater has been at the Gonville Nurseries, Cambridge, where he has been the most successful exhibitor at the various exhibitions in that and the adjoining counties, and as a citizen has gained the universal esteem of all who knew him. The deceased was a most diligent and ardent lover of floriculture, and had on many occasions exhibited successfully at the great shows of the Horticultural Society in London and the provinces. He was a successful hybridiser of Geraniums, his Forget-me-not being one of the best of its class. He retired to bed on Tuesday night at about half-past nine, and at about three o'clock in the morning passed away without a struggle. He leaves a widow and five little children.

Calendar.

KITCHEN-GARDEN.

IT may be well to examine seed-beds or seed-rows in which seed was sown last month, as much of the ground may be found empty, and the failure may be made good before the season is too far advanced. In low-lying and cold localities much damage has been done by the incessant rains, and many seeds have perished. For want of time we have the past season been obliged to dig over much of the ground unridged, but where it has been done the difference is very striking. Where the ridges were forked down the land is like powder, but it is the reverse where it was turned over only. Young beginners on their own account cannot always adopt the same system advantageously as they may have seen practised elsewhere, neither can the same kinds of vegetables, fruits, and flowers be grown to the same perfection in some localities as in others; difficulties are also common in some places though unknown in others. Shortness of means, large demands in proportion to the extent of ground, shallow and poor land, insufficient drainage, and scanty supplies of water, are some of the worst difficulties gardeners have often to combat with, so the young beginner has to be cautious and use much forethought; neither must he be led away

by reports, however favourable, from certain quarters, as some things do excellent in some localities, and are worthless in others. We have often been better advised by experienced growers in our own locality than by reports from different latitudes; but this does not mean that we are to underrate the reports of experienced men. Successional sowings of Peas may be made at least twice during the month; earlier and later kinds may be sown at same time. Full crops of broad Beans may now be sown. Keep up successions of Turnips, Cauliflower, Lettuce, Parsley, Radishes, Spinach; and small Salad-mustard and Cress may be sown under hand-lights, and a mat thrown over when frost may show itself. We prefer small quantities of most things sown often to large quantities sown seldom. Stake Peas before they fall over their collars. Thin early-sown Turnips; they are best when thinned early, and done at several times. Cauliflower, Cabbage, and any other of the Brassica tribe, may be planted out when ready. No plants should remain in the seed-bed till they draw up weakly. Keep surfaces well stirred among all early crops. Thin Spinach. New Zealand Spinach does well when grown under glass; but in most localities it does good ser-

vice when sown in patches 3 feet apart on rich soil: a position where early frosts in autumn will not easily reach it should be chosen. Beet may be sown on deep cool soil from second week to end of month or later. Carrots may now be sown. Short-horns may be sown closer in the rows than the larger kinds. The usual means to protect them from the attacks of vermin may be tried; some use gas-water (some time before the seed is sown), also sprinkle the surface with gas-tar, work lime and soot into the surface; but we have sometimes tried all these and other remedies and then miserably failed to produce clean roots. Manure is often blamed for causing vermin; but the finest Carrots for size and cleanness we have ever seen were grown here last season, and we learn that the ground was very heavily manured with rotten dung. The main crop of Celery should now be sown, if not already done. Hand-lights placed on a very gentle hotbed, using light rich soil for the seed, answer well. Sow plenty of Brussels Sprouts, Scotch Kale, and Savoys, all kinds of Broccoli, Cabbage, and any other autumn and winter crops. Some kinds of Broccoli, such as Walcheren, White Cape, and Granger's, may be sown as late as the middle of May, and later in southern localities. Veitch's new autumn Cauliflower is a useful acquisition. Salsify, Scorzonera, Rampions, Chicory, and broad-leaved Dandelions may be sown towards the third week of the month and treated like Beet. Spinach Beet, where it is used, may be sown about the end of month.

Full crops of potatoes may now be got in. Jerusalem Artichokes and Sea-

kale roots, if not planted, should be got in without delay. Rhubarb which has been forced under cover may be divided and planted in rich soil, 3 feet apart each way. Sow seed as formerly advised. Seeds of hardy herbs may now be sown, and the herb-ground overhauled. Some may be increased by dividing them. French Beans and Scarlet Runners may be sown in warm positions, but in moderate quantities, till next month; a frame for these crops is of great service. To keep up a supply of French Beans till they are ready for use in the open ground, a good breadth may be sown in a frame after the first crop of early Potatoes is lifted. A Mushroom-bed for summer supply may be placed at the back of a wall, and covered with straw or soft hay. Cucumbers for ridges, Vegetable Marrows, and Gherkins may be sown during the month, and grown in warmth till they are good plants; they may then be carefully hardened to fit them for planting out by the end of May. More Capsicums, Chilies, and Tomatoes may be sown in heat. Those growing freely may be kept near the glass, and be allowed plenty of air. All vegetables now forcing under glass, such as Potatoes, Carrots, Turnips, and Radishes, must have plenty of tepid water. The lights taken off during warm showers will do much to help them. Asparagus-seed may now be sown, and roots planted; rows on raised beds are still generally preferred, and salt may be given to crops in active growth. Get all borders and plots arranged to proper bounds.

M. T.

FORCING DEPARTMENT.

Pines.—If the succession plants that have been shifted in the end of February, and in March, and that have been plunged in beds of fermenting material, such as leaves and tan, are dry at the root, let them have a good watering at once. They should get as much as will thoroughly moisten the whole ball. Now that they are rooting into the fresh soil, and the days are brighter, calling for more air, they require more moisture to enable them to compete successfully with the increased demands of light and air upon their system. The atmosphere, too, should now be more moist, in proportion as the days are bright. But

avoid excess of this element either in the soil or air, more especially as the plants are not yet in full tide of growth. With increased sunshine the fermenting bed, if made up afresh in spring, is apt to heat over much. Whenever 90° is exceeded, let the pots get a gentle shake to cause an opening by the sides of the pots till the heat declines. Aim at a bottom-heat of from 85° to 90°. Towards the end of the month, the night temperature may range to 70° on mild nights, but be content with 5° less when cold and windy. Take advantage of sunshine by shutting up early in the afternoon, so that as little fire-heat as possible be required in the

early part of the night. Give the plants a gentle dewing overhead two or three times a-week at shutting-up time in fine weather. As soon as the heat touches 75° in the morning, give a little air, increasing as the day advances. Early-started Queens will now be swelling their fruit more rapidly: shut them up every fine afternoon, with sun-heat at 85° , for an hour or two, allowing it to decline to 70° by 10 P. M. Dew them overhead through a fine rose at shutting-up time—avoiding the crowns as much as possible—and sprinkle the paths, and occasionally the surface of the plunging material. When these are wanted as early as it is possible, let the forcing be chiefly done by day with sun-heat and light, and unless in exceptionally mild nights, 70° is high enough for the present. A careful eye must be kept on the soil to keep it moderately and regularly moist. Water when necessary with weak guano, or sheep or deer's dung water. Maintain a steady bottom-heat of from 85° to 90° : as soon as the young suckers on these are large enough to be removed, let them be thinned to two on a plant, and remove all gills that may appear on fruit-stems immediately they are noticed. Winter-fruiting varieties that started in early winter will be approaching maturity. Until these begin to change colour, treat them as directed for the early Queens; but as soon as they change colour, keep them drier at the root, and give less air moisture and more air. Any of the young stock not found ready for shifting last month should now be attended to.

Vines.—Early crops will now be colouring. Where these are on Vines having their roots mostly in inside borders, let the soil be examined immediately the first signs of colouring are noticed; and if in need of water, apply it in sufficient quantity to moisten the whole border, and afterwards mulch with such as old Mushroom-bed dung, so that no more water be required for a considerable time. Where the early crop is from pot-Vines, give them water in quantity, and sufficiently often to keep the system of the Vines healthy and fresh; but as hardened and matured foliage and wood cannot make use of so much moisture, it may be slightly decreased both at the root and in the air—not suddenly, but by degrees—with the progress of the Grapes to maturity.

Increase slightly and gradually the amount of air, being more particular than ever to leave a little on all night. Let the foliage be carefully examined, and if there is the least appearance of red-spider, attack it at once with a sponge and clean tepid water; and afterwards, if clean water is at command, give the Vines a vigorous syringing, and more than likely the pest will be entirely defeated till the crop is used. Now that less fire-heat is needed to keep up night temperatures, and with longer days and more sun-heat, keep the heat at 70° at night in succession-houses where the Grapes are thinned. Shut up early with sun-heat, starting the fires just in time to prevent the heat falling below the desired point at 10 P. M. The air moisture should be increased in proportion to the sun-heat, but avoid a stagnant over-moist atmosphere with a minimum temperature, or mildew may be the result; while over-much moisture with heat and too little air produces excrescences on the leaves which check their growth. Look over all growing Vines several times weekly, and stop superfluous lateral growths. Such growths are produced rapidly in the early stages when the Vines are vigorous and not over-cropped. It is bad practice to allow a rambling growth of these, and then to remove them in bulk at once. Thin advancing crops as soon as the berries of free-setting sorts are well formed, and thin them sufficiently at once; more shy-setting sorts, such as Muscats, should not be thinned so early nor so freely at first. In most cases all late Grapes will now be cut from the Vines. Any pruning yet to be done should not be delayed an hour. The wounds should be dressed twice over with styptic the day after they are pruned, to prevent any chance of their bleeding. The Vines and everything about the vinery should be put in readiness for starting again. Now is a good time to plant young Vines that were raised from eyes last year. Spring-put-in eyes should be shifted if in 3-inch pots into 6-inch pots, but not before they are well rooted: use turfy loam and a little bone-meal, but avoid fatty mixtures of animal manure.

Peaches and Nectarines.—Raise the temperature in early houses where the fruit have passed the stoning stage to 60° in cold weather, and to 65° when mild at night. Take every opportunity

of shutting up early with sun-heat, at the same time syringing the trees with tepid water. Examine the inside border, and if dry, give a good soaking with manure-water in the case of established trees in full bearing; but where the trees are young and growing strongly, use only pure water. Examine the trees carefully, and see that too much wood has not been tied in, and if so, and the foliage is becoming crowded, cut out superfluous shoots at once. Disbud the shoots and thin the fruit where it is thickly set in succession houses. Keep a look-out for green-fly, and get rid of it in the usual way immediately the pest presents itself. Wherever the least signs of mildew appear, dust the affected parts with sulphur, and give plenty of air, keeping the house slightly more dry until it entirely disappears. Give late houses a vigorous syringing immediately the fruit are all set to rid them of the blooms, and partially thin the fruit when the size of Peas.

Figs.—Old-established trees in full bearing, with their roots in limited inside borders, should be mulched with rotten manure, and copiously watered with manure-water; syringe freely at shutting-up time. Stop the young growths at the fifth joint. This is best done by merely bruising the tender points between the finger and thumb. The trees bleed less than when cut entirely through. See that no more shoots be tied in than can get room to expand their foliage fully to the sun. Early crops in pots will require careful attention in the matter of watering. They should never be allowed to become over dry; indeed, if the pots are full of roots, and the

trees bearing freely, it is not easy to overwater these after this season until the fruit begin to ripen, after which just enough to keep everything going properly should be given. Keep the night temperature from 60° to 65° according to the weather, with 10° to 15° more with sun for a time in the afternoon.

Melons.—Apply fresh linings to dung-frames whenever the heat shows symptoms of declining. Sow and plant out succession crops. Increase the supply of moisture in the air and soil in the case of all plants that have set a full crop. Keep the heat at 70°, with 10° or 15° more with sun. Look over those in bloom at mid-day, and impregnate those that are ready for it. Stop the laterals one leaf beyond the fruit. Plants trained in Melon-houses near the glass may be occasionally syringed, except when in bloom, on the afternoon of bright days.

Cucumbers.—The temperature for bearing plants may range a few degrees higher than the temperature formerly directed. Let the border of those in full bearing be mulched with rotten manure and turfy loam in equal proportions. Shut up early in the afternoon, and syringe with tepid water after bright days. Thin off all deformed fruit, and pinch the laterals at every leaf. Keep the border regularly and moderately moist; sow and plant for succession crops.

Strawberries in Pots.—See former Calendars. Introduce more plants into heat, and give to those from which all the fruit are gathered the shelter of a cold frame, to be well hardened off before being planted out.

Notices to Correspondents.

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in the 'Gardener' to David Thomson, Drumlanrig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to, be forwarded by the middle of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

ERRATUM.—In 'Gardener' for March, page 127, line 13, for "1-inch earth" read "good brick earth."

A. B. C.—Front ventilation alone will not be sufficient ventilation for your Peach-house. There should also be means of ventilation at the highest part of the house. There is no objection to the method recommended in the work you name, but we do not consider it necessary for Peaches.

D. E.—We do not know of a work specially devoted to your subject, but it is included in Loudon's 'Self-Instruction for Young Gardeners,' in which you will find much besides that will be useful to you.

READER.—We never found any difficulty in getting a good set on the laterals, and consider the sub-lateral system a mere waste of time. Your other question would take up our whole space, were we to attempt to reply to it. You will see some excellent papers by our contributor "The Squire's Gardener," on the subject, in our issues of 1872.

SUBSCRIBER.—Apply to the 'North British Agriculturist,' a paper devoted to farming, and published in Edinburgh. Your want is quite out of our sphere.

T. P.—The United States is a good field for young gardeners willing and able to work hard. We know of a youth who landed at Boston last fall, and was engaged next day at 50s. per week as a foreman. Canada, no doubt, affords good openings.

T. G.—*Boronia serrulata*; *Genetyllis tulipera*; *Leschenaultia formosa*; *Phænocoma prolifera Barnesii*; *Punelea Hendersonii*; *Acrophyllum venosum*; *Eriostemum buxifolium*; *Tetradthea cricoides villosa*.

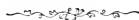
CAM.—We are sorry that we cannot inform you of the publisher. Any bookseller will find out for you.

U.S.—Coniferous plants may be successfully grafted at any time between the end of August and beginning of April. We prefer the end of August, or as soon as the young wood is ripened. The best mode is what is known as "side grafting"—that is, the top of the stock is left on till such time as the union is effected. If the operation is performed in autumn, the plants should be kept close and cool till early in spring, when they should have a mild heat to start them into growth: if deferred till spring, they may have heat at once. During the whole process a close moist atmosphere is absolutely necessary, and in all cases it is of great importance to have the stocks well established in pots—if a whole year, so much the better.



THE
GARDENER.

MAY 1873.



CAN OUR PRESENT WASTE IN HEATING HOTHOUSES
NOT BE REMEDIED?



F the present exceptionally high price of coal continues, will it affect injuriously the development and progress of the forcing or hothouse department of Horticulture? This is a question which is being considered at present with considerable misgiving. That it will exercise a considerable influence on the owners of gardens, as to whether they shall expand their glass-houses, or make a beginning in the case of those who have not yet embarked in the production of tender fruits and flowers, is beyond any doubt. In many localities coal is at present nearly, if not quite in some instances, two hundred per cent higher in price than it was three or four years ago. Nor is coal the only agent at present indispensable in hothouse heating that has advanced in price. Coal is only the heat-generating agent. Iron forms the highway by which it is carried and distributed to the atmosphere of our plant and fruit houses; and iron, too—always an important item in hothouse erections—is now well-nigh 100 per cent dearer than it was two or three years ago. Here, then, we stand face to face with two articles—to say nothing of others—on which this important branch of gardening is, it may be said, solely dependent, enormously enhanced in cost; and it would be folly to doubt that, in consequence, fewer Orchid-houses, Graperies, and Pineries will be erected, unless some means of great economy in heat crops up to counterbalance the present state of things, which it is to be feared may last for a considerable time.

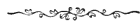
We do not require to look far afield or study profoundly to see that there is a waste of heat going, and apparently to be allowed to go, on with the greatest complacency in this country, first, in nearly every dwelling-house in the kingdom, to an extent which, when it comes to be considered, is barely worthy of the rudest barbarism. Most certainly, if such a deliberate waste was perpetrated in connection with any other necessary of life, it would not be too much to look or call for Government interference to prevent it. By way of pretending to heat our living rooms and cook our food, architects persist in making a recess in one corner of our rooms, in which to burn coal by the hundredweight; and which is effectual in no earthly way, unless it be that of sending the whole, or nearly the whole, heat up a chimney, to serve no purpose more sensible than that of being a nuisance to all animal and vegetable life outside our dwellings; unless, indeed, it be the still more undesirable one of creating draughts of cold air inside, and rheumatics and colds to boot. This is one of the most deplorably outrageous wastes of an expensive necessary of life that ever characterised any age or nation worthy of being ranked among the scientific and civilised. We do not think it is too much to say that there is as much heat wasted in Glasgow as would heat every dwelling and hothouse in Scotland, or as much wasted in London as would go a long way towards keeping every shivering limb in England warm and comfortable if it were properly applied.

But turning to Horticulture, with which we have at present to do, it cannot be said certainly that the waste is so deplorable as in the case of our living-rooms and kitchens. Indeed, if gardeners heated hothouses in so dirty, unhealthy, and wasteful a manner as their living rooms are heated, it would take twenty fires for one that is used in connection with horticulture. Perhaps it may, however, be justly said that, as we heat by hot water travelling in iron pipes, a certain and considerable amount of waste is unavoidable. It may be difficult to dispute this; but surely horticultural engineering and genius are not so fully exhausted as to be bound for ever to water and pipes of iron, which, in spite of dampers and the most ingenious boilers yet invented, only catch or absorb part of the heat generated by coal; the rest is so far wasted in passing into space by the very "short cut" of chimneys.

Our present object is to appeal to our horticultural engineers and Royal Societies for assistance. Can they do nothing more, nothing as good, and yet much cheaper, in the way of heating the air of our hothouses, than exists just now in the shape of expensive boilers, tons of bricks and iron, and water? Never before was economy of heat so urgent in the history of British gardens, at least not since railroads

were invented. Coal is now a serious item to encounter in erecting and working hothouses. The waste of it is perhaps the most serious part of it all. Are we to suppose that efficiency and economy in hothouse heating have reached their climax? We should be sorry to think so. If the grimy sons of the pit cannot be superseded, or aided so far by means of machinery to cheapen the coal, can we not hope for relief to come from an improved system of applied heat? We do not know of anything that would at present give a greater momentum to Horticulture as a greatly lessened cost for coal: whoever can happily hit upon any means of doing this his fortune would be certain. Cannot any system be invented by which we can more directly heat the atmosphere of hothouses without so much costly iron, such immense bodies of water, and such an escape of heat up our chimneys? Who will say that there is not, if it could only be found, as the sculptor finds his ideal figure in a block of marble? We are under impression that there is a road to this desired end, and that it lies more by way of heated air than heated water and expensive water-ways.

An inventor of an apparatus called on us the other day with models on his way to the Patent Office, which invention he has proved, in heating a range of hothouses, supplies the heat for nothing; or rather it produces so much of another material in the process of heating as clears all cost. We hope soon to be able to refer to the particulars of this process, which will be applicable to many districts in Britain, though not to all. We know that others are at present deeply engrossed in solving the hot-air principle, and to these, and all others that will so far effect the end, every well-wisher of Horticulture must wish good speed. A correspondent hailing from the Scotch oil district favoured us with a communication some time ago on economic heating, and promised to refer in our pages to the matter again; we should be glad, and no doubt so would our readers, if he would redeem his promise.



THE CULTURE OF PITCHER-PLANTS.

(NEPENTHES.)

AN erroneous idea seems to have gained ground with horticulturists generally—viz., that *Nepenthes* are very difficult plants to cultivate satisfactorily; hence we find gardeners as a rule set their faces dead against admitting these interesting plants into their collections; indeed, by many they, together with orchids, are regarded with marked antipathy, notwithstanding the excellent examples afforded by Mr Thos. Baines of Southgate and Mr Speed of Chatsworth.

Nepenthes require an open compost, similar to that recommended in our last chapter, and an abundant supply of tepid water at their roots when growing. Frequent syringings are beneficial during the summer months, and greatly promote healthy, vigorous growth.

The root space required by these plants is small in proportion to most other plants, so that care must be taken not to over-pot them, more especially in the case of newly rooted cuttings. When pitcher-plants are well grown, I know of few other plants that attract more attention from general observers, while they are always interesting to professional plantsmen and amateurs alike.

Several beautiful varieties have been obtained by hybridising in the Royal Exotic Nurseries at Chelsea, and doubtless others will speedily follow. Of those already obtained we may notice *N. Dominiana*, *N. Sedenii*, *N. Chelsonii*, *N. hybrida*, and *N. hybrida maculata*.

We will now glance at a few of the species and varieties commonly met with in gardens and nurseries, appending such descriptions as may be requisite.

N. ampullacea.—This is a species remarkable for the profusion in which clusters of pitchers are frequently produced on the lower portions of its stems and branches. The pitchers are subglobose, one to two inches long, and nearly as much in diameter. In colour they are pale green, more or less spotted and blotched with red, or reddish purple. *N. ampullaria vittata*, or *N. a. picta* as it is sometimes called, is a profusely blotched garden variety. It is commonly grown in gardens, having been introduced from the islands of Borneo and Sumatra. It is also found at Singapore and Malacca.

N. lanata.—This is one of the rarest, and consequently most valuable, of all the Nepenthes, bearing large pitchers six inches to nearly a foot long. The mouth of the pitcher is very broad, and of a bright reddish-crimson colour. The wings of the pitcher are slit into curious fringes. This superb plant is a native of Borneo, where it is found at an altitude of about 2500 feet. I believe it was originally introduced to the Royal Exotic Nursery by Mr Thos. Lobb, one of the most conscientious and enterprising of the collectors employed by Messrs James Veitch & Son some years ago, and through whose labours many beautiful and remarkable plants found their way into cultivation and commerce.

N. Rafflesiana.—This is a fine species, bearing two kinds of pitchers, which vary considerably in form and markings. The pitchers borne on the lower portion of the plant are 5 to 7 inches long, and 3 to 4 inches in diameter, of a pale green colour, heavily blotched with dark purple markings. The upper pitchers are funnel

shaped, often nearly a foot long, and from two to three inches broad at the mouth, from whence they gradually taper downwards into the prolonged base of the midrib. A specimen of this species, grown by Mr Baines, bore upwards of fifty finely developed pitchers, and was one of the most remarkable plants ever seen. The *Nepenthes Hookerii* of gardens is a variety of this plant, having shorter and rounder pitchers, more heavily blotched with purple than in the normal type. Of this plant again there are two sub-varieties, one being covered with whitish hairs and the other being perfectly smooth.

N. phyllamphora.—This is one of the commonest species, and one of very vigorous growth. Its cylindrical stems shoot up six to eight feet high, bearing lanceolate oblong leaves twelve to sixteen inches long. Pitchers four to six inches long, about an inch in diameter and very freely produced. I have found this plant valuable as furnishing an abundance of leaves and pitchers for cutting. They have a very pretty effect, arranged along with choice flowers and ferns, and have the additional merit of lasting for a long period in the drawing-room vase. This species is a native of China and the Malayan Archipelago, and is often sold and distributed as *N. distillatoria*, an old species described by Linnaeus, a native of Ceylon, the normal type being extremely rare in cultivation.

N. rubra.—This is a variety of *N. distillatoria*, having peculiar flask-shaped pitchers four or five inches long, and of a purplish red colour throughout.

N. sanguinea.—This is a fine species and rare in cultivation, having triangular smooth stems and ovate oblong leaves. The pitchers borne by this plant are large, being upwards of a foot long and about three inches in diameter. They are downy and of a beautiful crimson colour. It is a native of Malacca.

N. gracilis.—Stems smooth, three cornered; leaves, small, being about six inches long, and an inch wide; pitchers two to four inches long, narrowed in the centre, and having a pair of narrow fringed wings. The older pitchers are destitute of the latter appendages. This plant bears a profusion of its small greenish pitchers, and like those of *N. phyllamphora* they come in very acceptably for cutting and decorative purposes. It is a native of Sumatra, and is also found in Borneo, altitude 1500 to 2000 feet.

A smaller variety of the latter plant is often called *N. lævis* in gardens.

N. Dominiana.—This is one of Mr Dominy's hybrids, *N. Rafflesiana* being the seed-bearing parent, fertilised with pollen from an undetermined species from Borneo. It somewhat resembles *N. Rafflesiana*, but is much finer when well developed. Its pitchers are six or seven

inches long, and about three inches in diameter. Colour, green, heavily blotched with rich dark purple. The lid of the pitcher is smaller than the mouth, spotted with purple, and is ribbed behind.

N. hybrida maculata.—This is another seedling of rather dwarf habit, bearing pitchers four or five inches long, of a dark green colour, marked with longitudinal blotches of purple. Plants a foot high bear numerous well developed pitchers.

N. boschiana closely resembles this variety, but is not winged.

Nepenthes are seen to the best advantage when grown in baskets of either wire or wood, as then their pitchers droop gracefully on all sides. Of the above selection *N. Rafflesiana* and its variety *N. Hookerii*, *N. Dominiana*, and *N. Khasyana*, var. *rubra* (syn *N. rubra* of gardens), are strong growers and within the reach of most plant growers. *N. sanguinea* and *N. lanata* (*N. Veitchii*) are rare, and consequently very expensive.

The pitchers of *Nepenthes* may be preserved as ornaments by being filled with dry sand, and afterwards thoroughly embedded in a box filled with the same material, which should afterwards be placed in a dry place for a fortnight or three weeks. At the expiration of that time they may be taken out, and will be found thoroughly dry. A coat of clear copal varnish or gum will revive the colours, and give them a fresh appearance. Grouped along with skeletonised leaves and fruit vessels, or dried fern fronds, these preserved pitchers have a pleasing effect when tastefully arranged beneath a glase shade.

F. W. B.



LOW NIGHT TEMPERATURE.

YOUR leader in the March number of the 'Gardener' on low night temperatures raises a question the importance of which it would be difficult to overrate. I had almost said raises the whole theory of gardening under glass. To definitely solve the various relations of heat, moisture, air, light, and darkness as far as their relations are concerned in the maturation of a perfect plant—that is, plants thoroughly developed in leaves, wood, flower, seeds, or fruit—at the least possible outlay, would be of incalculable value. A plant uses only a given amount of heat, moisture, and air in passing through its various stages to maturity. What is given over the required amount is waste, and what is given under this required amount I would characterise as the least desirable of the two extremes. What we have to aim at is to try to reach the closest approximation to what is necessary—this is the seeming difficulty. To thoroughly clear up these points would be worth years of labour. Although we may have no record of such a thing, I cannot but think it has been, and is being, arrived at possibly by some quiet practical men, who, as a rule, do not approve of much noise about their doings. What is a low night temperature? and what is a high night temperature? Your correspondent in the tropics mentions that the thermometer goes down to 40° or below it. Now to adopt 40° as a night temperature, and

keep our houses for tropical plants and fruits by day, as they generally are kept at the present time, we would have a very poor result; and so long as day temperatures are kept as they generally are, it would not be very good practice. Of course I am speaking of plant-stoves and forcing-houses—the greatest consumers of coal, and which require the highest temperature. We never have, as a rule, aimed at a strictly tropical day-heat. Indeed it would in winter be all but impracticable to do so. We have rather been contented with 50° to 60° night-heat, and from 60° to 70° day-heat, and lower in very cold weather, and higher with sun-heat, which is such a scarce commodity with us from October till March that it can enter but little into our calculations. A fall to 40° in the morning sometimes occurs, but on such occasions the heat is got up 5° or more as quickly as possible, as compensation. The only perceptible harm I ever could detect in going down to 40° happens to the flowers. I have long acted upon the theory that a low night-temperature must have a corresponding high day-temperature, but the middle course is the safest. In coming to summer treatment, say from March to September, this is the time in a good many cases that the coal bill may be lessened, not only with no evil result, but with much positive advantage. It is the proper balancing of heat and moisture at the roots and in the air that gives us the most luxuriant growth. Nothing can operate so much against a growing plant as hot, dry, hard, thin air. Do we as a rule utilise sun-heat as we ought? I rather think not. The usual practice is to do all, or nearly all, the watering at night and morning, which is all right as far as it goes; but something more remains to be done, and that is to feed the air properly with moisture during the day when the houses are hottest. It is far more needed then than at any other time, because it mixes with the hot air, and is then made into proper food for the plants.

Moisture and heat must—if I may use a homely phrase—go hand in hand if you wish a steady luxuriant growth. It is far too often the practice to allow the best and fattest of the air to escape by the top ventilators, before it has given any material assistance whatever to the plants. There is no greater inconsistency in practice than having heat in our power, and allowing it to pass away without first having secured all that is valuable out of it. I would say that far too much air is given during sunshine. The roofs of our houses, as a rule, are pitched at the best possible angle to catch as much of the sun as we can, which soon runs up the thermometer to tropical heat. This is the golden time for plenty of moisture in the air. But what do we do? We open top and bottom ventilators, until we have it down to 80° or 85° . Why not give plenty of moisture to the air, and allow it to run up other 10° or 15° , and then the plants would enjoy the benefits of a cool temperature at night? The air should always be circulating; never at rest, but always moving—of course more by day than night. A high thermometer is no indication of itself that growth is progressing according to the heat. It is only when duly tempered by moisture that it can be most acceptable to the plants. What I would propose would be something like the following: To collect in a tabular form all the information from your numerous correspondents on the points at issue, which, to be of any available use, must to the minutest degree be trustworthy. Say, to note the outdoor thermometer and barometer three times a-day; the same with indoor thermometer; also the quantity of water made use of, and how; with the weight of coal consumed per day or per week, and what other conditions you might think proper to impose; with notes on the various stages of growth up to maturity. If you could only set this machinery in motion, it would, in my opinion, lead to a great reform, although it may be years before we arrive at

thoroughly reliable data. Could not some of our experimental gardens have solved this for us before they were abolished? They certainly would have been entitled to our lasting gratitude. I have to apologise for taking up your valuable space, and, with your permission, I purpose in a future paper giving notes and observations bearing upon the above, which I have made from time to time.

T. SY. M.

[We will be glad to have the notes referred to.—ED.]



BALSAM-CULTURE.

THE common garden Balsam is now one of the most beautiful of our summer decorative annuals. It is of East Indian origin, consequently tender. Its position should be in the list of subtropicals. It, like most flowers taken in hand by the florist, has been very much improved, and none but the very best strains should be grown. There are still a number of flimsy trashy varieties sold, of lanky habit and indescribable colour, like the bulk of German ten-week stocks: therefore the first consideration in starting to grow Balsams is to obtain good seed; and when a good strain is secured, seed should be saved from picked plants.

It is no great exaggeration to call many of the better varieties *Camellia*-flowered. The last two years we had some white flowers that were quite reflexed in the petal, and imbricated, and perfectly double, like a *Camellia imbricata*, from seed got at a respectable London house; the colours very fine, various shades of red, pink, and almost crimson, white, and mottled, as well as good purples, alongside of which common strains, or indeed no strain at all, would not have been looked at.

The quality of flowers, however, depends much on culture. Under the best management it will be observed that plants which have yielded very fine flowers when in their progressive stages will, when on the wane, produce flowers quite single, though the colours will be still distinct: then is the time to secure seed—to obtain a crop of good plump seed in this climate by planting out a selection of the earliest plants, which have flowered in pots, on a bed of rich soil, in the blaze of the sun in the open air. This is, however, not necessary to seed saving, only it saves labour in watering and house-room; and, moreover, a Balsam in a seedy state is not ornamental indoors. The Balsam should be quickly grown when taken in hand; it requires plenty of sun and air, so that it is not advisable to sow the seed very early in the season. The plants should never be drawn by want of light or room, and not starved for want of pot-room if large plants are wanted. A large Balsam can be grown in a comparatively short time under good conditions. A bright sun and plenty of air are essential to mature the growth as it progresses. We therefore do not advise to sow the seed before the first week in April for the first lot; later sown will

even be better. As the sun increases in power and the plants in size, air may be given with more freedom with the advancing season.

If seed be scarce, we prefer sowing single seeds in small pots, or, if plentiful, more seeds to the pot, selecting one plant and pinching out the rest. When they are well up, the pots are placed in a dung-frame or warm pit near the glass; and at once guard against over much moisture and closeness, as the seedlings will get drawn in one day if forgotten or mismanaged. From the beginning the pots would be better plunged in sawdust or tan, thinly, but more especially as the plants advance in size, when more air is given: a steady temperature of from 75° to 80° at the root is immensely in their favour; the top heat may fluctuate very widely without any harm.

If the seeds have been sown in 3-inch pots, the first shift should be into 6-inch, with one large crock over the hole. They should be shifted when the roots have got well hold of the ball of soil, but not matted. The plants will be by this time short sturdy fellows if they have not been coddled. Some do not mind their being a little long in the stem, as the balls can be kept low in the pots at the time of shifting, and the soil brought up to near the first pair of branches; but we do not advise the practice, because it should not be necessary. When shifted, they must be again plunged, but not in much bottom-heat; the heat of the sun on the plunging material, whether sawdust or tan, will be sufficient in May and onwards.

At this first shift it will be necessary to speak of soil. We prefer turfy loam of a sandy nature, which has been stacked for a few months with layers of dung put up with it; the turf will have absorbed the good qualities of the dung. We chop it up rough on the potting bench, and to it we still add a third of horse-droppings, which have been prepared for the mushroom-house, with the bulk of its good qualities remaining, but sweetened for use: old mushroom dung is poor stuff. If the soil is not sufficiently sandy—that is, if it be of a close texture—a small portion of gritty river-sand should be added, or sharp pit-sand; fine silver-sand is not necessary to such a coarse-rooting plant as the Balsam, although it will do perfectly well. We, however, prefer for coarse-rooted plants a coarser sand. The sand in this instance is not necessary simply to keep the soil open mechanically; sand is necessary, we believe, as a feeder or digester, especially in very rich soils. A plant will sometimes be found not to root in pure dung, but add a portion of sand to the dung, and it roots in it directly. With the above soil the plants may be potted rather firmly.

Increased attention will now be required to air-giving. The plants must have plenty of room, to allow of a free circulation of air about them, and prevent them shading each other—the lights of the pit tilted half

way down the side, not top and bottom, to avoid draughts. They will now make very rapid progress and sturdy growth. Water cautiously after potting for a few days, and always with water the same temperature as the plunging material. A comfortable condition of the root, not actually bottom-heat—as usually implied, that expression is apt to lead astray—but a steady warmth, is one of the most essential points in the culture of tropical and sub-tropical plants; for although the atmosphere may vary in temperature, there is a steady rise or decline in the soil with the season in most climates. Watering with cold water is a serious evil with plants in pots, and very soon ruins a Balsam.

The next shift may be into 10-inch or 12-inch pots, if large plants are wanted; 8 or 9 inch pots are large enough for general decorative purposes. If into 10 or 12 inch pots, room should be left for an after top-dressing of dung—sheep's dung we prefer—keeping the plants plunged until they are large enough to be moved into the show-house.

Some pick off the early blooms with the view of retarding the general flowering and strengthening the plants, but we do not think there is much gained; if the plants be quickly and liberally grown, this will not be found necessary. If they have been checked or starved for want of room or water, this picking off the blooms will not make up the difference.

Some also pick and tie out the plants. We have done the same, but the Balsam is a stubborn subject under training; it resists it obstinately. If done at all, it must be done with much caution and coaxing, like tying down the young shoots of the Vine when vigorous. A specimen Balsam should be grown without pinching or tying. We think when a Balsam is manipulated in this fashion, its character is spoiled directly.

When the plants are removed from the plunging material to the show-house, care must be particularly taken not to over-water, especially if in large pots; yet they must not be allowed to flag. Most of the feeding roots will be near the sides of the pot; water should be given round the circumference rather than close to the stem, where it may be allowed to become comparatively dry. They must never be shaded or crowded, but have plenty of air and no draughts. Plants often sicken off when removed to the greenhouse: this is owing to the check of removal from the plunging material in a highly cultivated subject; hence the caution required in watering.

The Balsam can be grown to a huge size, with attention to potting and growing on. We have seen them in 18-inch pots from 3 to 4 feet through every way, but we never grow them that size. We once saw a Balsam, grown by a cottager and exhibited at one of the leading provincial shows, which was the above size, and was the wonder of many. The first referred to were about a dozen in number; they were grown in a lean-to house, an old pine stove. The plants were plunged in the pit in

front, under the lower sashes of the house, and the upper sliding sashes were entirely wanting; so that the Balsams enjoyed themselves perfectly: abundance of air, no draughts, comfortable at the roots, and the full blaze of the sun. They were grand plants, were neither tied nor pinched, but stiff and short jointed, the centre stems as thick as a man's wrist.

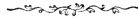
When the pots are filled with roots after the last shift, and while the plants are still plunged, they may have a little manure-water every time. It is needless to say that the Balsam is a gross feeder, and capable of appropriating large quantities of stimulants under a hot sun; but when removed to the show-house, manure-water must be administered with more caution, and none at all when the weather is dull and wet. A little top-dressing is better, as they will root up to the warm surface.

THE SQUIRE'S GARDENER.

EARLY AND WINTER LETTUCE.

A HEAVY and well-hearted Lettuce is a good thing, but it is not absolutely necessary that it should be big and heavy to be acceptable as a salad. Besides, Lettuces when forced are rather stubbornly inclined to be open-hearted—a fact which market-gardeners know; and so they tie them up the day before sending them to the market, in order to suit their customers, or rather to deceive them. Still, a Lettuce grown fast, and in a rich soil, makes just as good and tender a salad as any when pulled young, and every leaf is clean and usable. To plant Lettuces 8 or 9 inches apart in frames for a winter and early spring supply, takes up a great deal of space for all the return they give—a fact which every one knows who has to supply a quantity during the winter months. We found this out long ago, for our Lettuce-frame was never at liberty till October; and though planted full at ordinary distances apart, it would not carry on the supply long enough; so we had recourse to thick-planting—that is, we planted autumn-sown plants 4 inches apart between the rows, and the same distance between the plants. The lights are then put on, the plants are well centred and heated to a genial temperature, watering when needful, but otherwise keeping the frame dry. They soon begin to grow quickly till they meet each other, and with the crush the leaves are thrown up, till each plant is like a cup and begins to heart. Long before they get this length, however, we begin to pull—first taking every alternate row, and afterwards every alternate plant in the rows left. The last plants, of course, get big and hearted before they are needed, but I cannot say they are appreciated more, if as much, as the first tender little plants, which are sent in in quantity. In this way, we have

always an abundant supply of first-rate Lettuce all the winter and spring months from a frame of moderate dimensions ; for in spite of all that has been said about the French *cloche* for Lettuce-growing, I prefer a good light frame, which is infinitely easier to manage, more convenient, will accommodate more plants, space for space, and is upon the whole cheaper. Some may think that plants grown in this crowded fashion in the winter months would be apt to damp off, but they are not. As I said before, the frame is kept dry. When the plants are watered, a fine day is chosen for the job, and the lights are left off till they are dry again ; but they cover the ground so thickly that very little watering is required after the end of October. Our spring frame has been crowded since March with fine succulent plants, though continually thinned out ; and the supply will last us till the first outdoor batch is well in. I therefore advise to plant thick for such crops if you want quick returns and a plentiful supply. J. SIMPSON.



EARLY RIPENING OF GRAPES FOR LATE SUPPLIES.

THIS important matter, though a very old story, is being ventilated, and all the light which can be thrown on the subject can scarcely be overdone, especially when backed by the experience of such successful growers as have already expressed their opinions in the 'Gardener.' I think, however, most practitioners will endorse Mr Henderson's experience against Mr Simpson's ; and before casting my quota for the press I would mention that position of borders, whether elevated or low, inside or outside, have a good deal to do with the best time for ripening the fruit for keeping. Heavy and light soils also change, in a measure, circumstances. Early ripening and thorough ripening I think is what one generally aims at when they have to supply Grapes as late as April or May, or to keep the old till the new are fit for use ; and if I were called upon to supply Grapes very late I would have them coloured by the end of August and well fired with abundance of air on, back and front, well into September, thus filling the berries well with saccharine matter, expelling watery substance, making the berries firm, sweet, and crackling, at same time keeping all laterals closely stopped or rubbed off, thus securing foliage like leather, wood as firm as whalebone and as brown as filberts. Very strong wood never was in high favour with me when high-flavoured late Grapes were to be supplied in the spring months. Practice being generally more tenable than theory, however well based, I may be pardoned for trespassing on valuable space by giving briefly my experience. Early ripening of Grapes to have fine flavour and to keep well was first impressed on my mind when a foreman in Wiltshire many years ago (I often saw

it mentioned in calendars then and long before that time when I was a schoolboy, I think in the 'Gardener and Farmer's Journal'). A Hamburg house at that place in Wilts which was intended for late work (but could not be kept back, as the hot-water apparatus was out of order and worked to some extent with the earliest house which supplied fruit in May) ripened their fruit in August, which were always finely coloured and highly flavoured, and they kept better than those ripened a month or six weeks later; but then, like foremen generally, I could not go far with experiments. When growing on my own account some years later in East Anglia I observed that a neighbour, a very successful grape-grower (the late Mr Allan, then gardener to Lord Rendlesham), had his Grapes which were to give supplies in February, ripe early in September. The kinds were Black Hamburg, and splendid fruit they generally were; Lady Downes was then little known for its keeping quality; Barbarossa was out of favour; West's St Peter were among the latest keeping kinds of Blacks, and Muscats were valued most among whites. I remember how well Mr W. Thomson kept these at Wrotham Park when I was under him there. I do not remember the time of year they were ripened, but their golden skins showed that they were "thoroughly ripened."

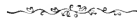
My first attempt to keep Grapes late was in 1860, when I managed to have Black Hamburgs in good condition in second week of March: they were plump, very large in berry, and high flavoured. When at Balbirnie I was able for eight years running to have Lady Downes as late as April in as sound condition as they were in September—footstalks green, bloom quite fresh, and those who ate them spoke in high terms of their sugary flavour. Five or six years running I exhibited Lady Downes at spring shows held in Edinburgh, and always held good positions. These were generally well advanced in colouring by August, and were exposed to free currents of air night and day with heated pipes during September. It is no uncommon thing for growers to finish firing when the berries have finished colouring. The fruit under such circumstances do not retain a good flavour late in the season, even if they should keep well. On 9th June 1869 I exhibited a bunch of Lady Downes which was ripe early in the September previous (see 'Gardener' for July 1869, page 332), and which were as plump on the exhibition table as ever they were. Golden Hamburgs I had ripe in August were kept in sound condition till February with less trouble than those ripened later. Two seasons I kept till April Muscat Hamburgs, Trebbiano, West's St Peter, White Muscats, Royal Vineyard, Black Hamburgs, Burchardt's Prince, and several others, with very little trouble, after being ripened with a high temperature in August. One season I sent Grapes to the Royal Horticultural

Society of London in April and May which were awarded a special certificate (but I have not yet seen it), and two letters sent for inquiries as to their treatment, &c., stating that they were the finest flavoured late Grapes which had been sent to South Kensington after being cut and hung up with their wood in bottles of water. These were the earliest ripened late Grapes I ever had. It is only fair to state that if I had last winter been called to keep Grapes from these Vines late in the season, I could not have done it so satisfactorily as formerly. The cold, wet, and sunless season was so trying for Vines which had their roots entirely outside, that thorough ripening was a difficult matter: fortunately for the earlier lots an extra demand early in autumn consumed them without loss. I have at present, 14th April, some very fine Alicantes, as fresh in berry and footstalk as ever they were; they were cut late in February and hung up in a cupboard in my dwelling-house (our fruitroom being more like a drill-hall for size, I preferred having the Grapes in smaller quarters). These were ripened (as far as I can learn) early in September under rough plate-glass. I am much in favour of rough plate-glass for Grapes, and other purposes. We never had to cut out a single berry from decay this year, except a few in January, when a quantity of plants had to be crammed in the late houses: these houses are very flat and about six feet high at front. A more trying time for wet I never knew. These Alicantes were grown by Mr John Austin, my much respected predecessor, who did much to improve the Vines here. It will be seen from these fragmentary remarks that I am inclined to support Mr Henderson, and have given an outline of my experience for what it may be worth.

M. TEMPLE.

BLENHEIM.

[How doctors differ! We wish we were in a position to exchange rough plate-glass for clear sheet with Mr Temple; but then Mr T. is in Oxford, we in gloomy Dumfries.—ED.]



KEEPING OF LATE-RIPENED GRAPES.

ANENT this subject I would just state that part of our Lady Downes Grapes, which, as I stated before, were not ripe till the end of October last, are still hanging, April 15, in the fruit-room, having been bottled since February, and are in exactly the same condition as regards preservation as the bunch sent to you on the 10th of March. Most of the bunches are perfectly intact, not a shrivelled berry is to be observed, and they look as if they would keep for a long while yet. The bottles are not filled with water, but with moist charcoal-dust and soil.

J. SIMPSON.

WORTLEY.

NOTES ON HARDY FLOWERS.

Aquilegia aurea.—This is a new introduction from the Rocky Mountains. It is closely related to *A. Canadensis*, and in habit of growth, foliage, and height resembles that species. The flowers are, however, pale straw-coloured; and being a free-flowering plant, it will form a very desirable contrast to the blues and reds of other species and varieties. It appears to be as easily cultivated as any of its congeners, and quite as hardy.

Fritillaria tulipifolia.—This is one of those hardy flowers that may be described as peculiar and striking rather than beautiful or ornamental; but being a spring flower, it will be of interest to amateurs and others who delight in variety of character independently of showy colours. The flowers are solitary, drooping, large, and like an inverted Tulip, very dark or brown, purple inside, and milky blue outside. It is very hardy, and grows freely in common garden soil. Native of the Caucasus.

Campanula medium calycanthema.—The Canterbury Bell, though a favourite flower, and cultivated of old with more zest than now, has not improved, nor had any very striking feature added to it till within the last few years. The pale-rose varieties are the most marked improvement in colour that have been introduced for a generation or two, but we can now speak of an alteration in the calyx in the present subject, which adds a new interest and value to this old-fashioned flower. In this new variety of Canterbury Bell, the calyx is petal-like in colour, and to some extent it approaches the petal in size also, being much enlarged. At present the calyx is the same colour as the petal—blue or white, as the case may be; but a rose coloured calyx and white petal, or a blue petal and white calyx, or *vice versâ*, may be amongst the possibilities of the not very distant future.

Myosotis alpicola.—This is a diminutive but very pretty Forget-me-Not. It forms a neat tuft about 3 inches high, with small dark-green hairy leaves and deep-blue flowers, slightly fragrant—the latter quality most noticeable at night. It is best adapted to pot-culture among choice Alpines in a cold frame. The protection of a frame in winter is of most importance, because it is apt to perish if wet in the open ground. In summer, when making its growth, it will bear abundance of water, and must have it in plenty if free growth is to be encouraged, but the drainage should be very good. On well-constructed rockwork it will succeed better than on level borders, and may be left out in winter if care is taken to cover it in prolonged wet weather with a cloche or bell glass. Gritty loam is the most congenial soil for it. It is an old plant, but rare.

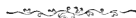
Pentstemon heterophyllus.—Beautiful and numerous as are the

species and varieties of this favourite genus, the present species lately introduced to cultivation is scarcely equalled in point of colour by any of the older and better known ones. It grows about 18 inches high, in neat compact style. The leaves are narrow lanceolate, pale green, or glaucous. The flowers are produced on long racemes, borne on slender stalks, and are brilliant sky-blue. From seed, the plant varies somewhat in colour in the depth of the blue, and occasionally in being reddish purple. It is a native of California. I cannot speak from experience of its hardiness and cultivation, but it does not appear to be more difficult than that of other Pentstemons. In wet, cold localities, stock should be struck in autumn in pots, to keep over winter under protection.

Primula elatior magnifica.—This is one of the most beautiful of the elatior-tribe of Primroses. It has the compact tufted habit of all the breed. The flowers are large, about the same size, and fringed in the way of a good type of China Primrose, bright gold in the centre, and shading into clear Primrose yellow on the margin. They are supported on stout stalks high above the foliage in great profusion, and are very fragrant. It is a beautiful plant for spring bedding, being very showy and effective in masses at a distance, and withal neat. For pot-culture, for the purpose of greenhouse decoration early in spring, it is very desirable, as it bears forcing very well, and lasts a considerable time in bloom.

Saxifraga peltata.—One of the most extraordinary and distinct of its family. It produces large lobed leaves 8 inches across, attached near the centre to strong stalks 18 inches or 2 feet long, and bearing striking resemblance to an umbrella, in consequence of which it is popularly called *Umbrella plant*. The flower-stalks rise to the height of 2 feet, bearing cymes of large, white, rose-tinted flowers. It forms strong fleshy creeping stems, and is found growing on the margins of streams in California, with the stems frequently submerged. This at once suggests its fitness for ornamenting the banks of streams and lakes in this country, and that abundant moisture is an essential condition to its successful culture anywhere.

W. S.



TEMPERATURE OF FORCING-HOUSES.

PASSING over the little satire indulged in by your correspondent J. S. at my expense, I cannot however pass without notice his dark, and, to use his own words, "unscrupulous insinuations" as to my facts and intentions in, as he states, "my not accepting the plain reading, or even the words of his text, in his December paper." By way of demolishing me he would have your readers to suppose that it did not suit my purpose, but that I proceeded to alter both

to my satisfaction. So far from this being my intention, I was not aware until I read his paper in the April number that I had unwittingly substituted the word *Peas* for *Hamburgs*. I did not need, nor would it serve any purpose of mine, to alter his text. His next accusation is, that I made him appear to say that we might haul out our boilers and pipes. I had no intention, nor did I even make him appear to say so, but that was what I inferred from his statements, and so far as I am concerned I could maintain a temperature of 45° without them; but we will see by-and-by why J. S. cannot dispense with his. Again, he takes exception to my saying that he advocated a difference of 55° in 6 hours; he maintains that there is 18 or 20 hours allowed for the subsidence of the thermometer. Would he be surprised to learn that I counted from morning till noon, and I hold I am still right? If the question raised by J. S. had been regarding the best way to keep Vines in health, I would very likely have supported him, especially if he had not drawn the line at such extreme points. But it must be remembered that we are dealing with forcing-houses, and that very many employers require fruit at a given time, hence the information most desired by many is the highest safe temperature to insure success. J. S. quotes an extract from Dr Lindley's 'Theory and Practice of Horticulture,' to prove that the temperature varies about 55° in 24 hours in a vine-growing country. I need not quote the extract in full. "At Candahar, on the 30th of June, a traveller (Mr Atkinson) saw donkeys laden with panniers of fine purple grapes." But where is the account of the cold from? from the desert near Shikapore, where the traveller was on the 7th March. Again this same traveller on reaching Cabul in August found the bazaar filled with delicious grapes in astonishing profusion. Now the extract referred to never says there were even Vines at Shikapore, but at Candahar, 200 miles farther north, and at Cabul 500 miles farther north there is abundant evidence of grapes. Now where in all the world would one expect extremes of temperature if not in an unsheltered desert? Here is indeed a wide range of country to gather grapes from. We have no evidence of cold nearer the market where grapes are seen than from 200 to 500 miles, and that evidence is rather loose. "Frost seemed to be in the air, and they were grilling the day before at Shikapore." If these travellers had not more reliable indications of frost than that the night was cool and bracing, is it not quite possible that men that were grilling the day before might think the night chilling, although the temperature was very much above the freezing-point? Suppose we grant that it seemed to be freezing, many a hill, and dale, and sheltered nook, might intervene between Shikapore and Candahar, where Vines would be perfectly secure from the extreme cold felt in the desert. Is it to be inferred that because Candahar and Cabul were farther north it would be still colder in these districts? Such is not the case in this country, as the following will prove. At Garvald, in Peeblesshire, in the winter of 1865, we had a storm of frost and snow of seven weeks' duration, the thermometer registering, night after night, in February from 20° to 30° of frost, and while this storm held the ground hard and fast at Garvald, they were busy ploughing between Edinburgh and Glasgow, 25 miles farther north. I may add that, for the last five winters, a Negretti in the most exposed part of the grounds here has never registered more than 15° of frost, and that only on one or two occasions. In fact 9° of frost is considered extreme here, and at a place only one quarter of a mile from where I sit, they have upon all occasions 3° more of frost than what we have here. I think the above will show that there might be abundance of grapes in the markets of Candahar and Cabul, even though it were freezing in the desert in March; which from the evidence is very

doubtful, and far from conclusive. J. S. quotes next from the Statistics of the Scottish Meteorological Society. It will be seen at a glance that these quotations are the greatest extremes he could cull over a number of years, and are no criterion whatever of what the climate can produce. But after all, while it would be gratifying to know the circumstances under which Vines succeed abroad, it is no sure criterion for the British horticulturist, as the Vines under his care are home-raised, and inured to forcing; and it has long been our opinion that hothouse Grapes, as they are generally termed, owe (to a great extent) their superior excellence to the artificial and comparatively equable temperature in which they are grown, secure from extremes and vicissitudes, to which those in the open air everywhere are exposed. It will be observed that J. S. has modified his statements considerably in the April number. His argument is, as he states it: I am not going to quote it in full, it can be referred to. He sees no reason why Vines should be injured by a minimum temperature of 50° or 45° in certain circumstances. In the December number he predicted that if his reasoning was correct, if they were not allowed to fall to the above temperature, the end would be in the aggregate failure, ruin, and death. The only stage he referred to in his former paper was when Muscats were in bloom. In the April paper this is modified to the early stages of forcing, or "up to" the setting period. Now this is the period where both the night and day temperature are kept at their highest during the whole forcing season, and Muscats are, and have always been, recognised as the Vines that require most heat.

It will thus be seen that J. S. made his first attack on the very stronghold of forcing. He has been beaten back now behind the setting period. It will also be observed that he contents himself now by holding that he recommended a minimum of 50° for Vines, Muscats not being specially mentioned on the last occasion. If this means anything, it means that J. S. is retreating as quietly as possible out of the position he took up in December.

This will be more apparent when we take a glance at his treatment of the vineries under his charge with which he has been kind enough to favour us in his last paper. He says, "Our early vinery is allowed to fall to 50° or 55° before sunrise in clear frosty weather up till the setting time, and our maximum night temperature for Muscats is 65° , often falling to 60° before morning. In mild dull weather this practice is modified considerably; the temperature is neither so high by day nor so low at night:" which means most likely that in mild dull weather his minimum temperature may range from 5° to 10° higher. This is pretty near the practice of all judicious cultivators of the Vine, and we think forms a very good reason why he is not prepared to haul out his boilers and pipes. This is the nut cracked, and lo! it is nothing but an empty shell. J. S. asks for conclusive statements. What could be more conclusive than that a man proposes a system to others which he does not adopt himself? Nothing could be more conclusive than that the practice above referred to is pursued by every successful Vine-grower of the day; and if the article written by J. S. in the December number had passed unchallenged, many employers, who trust more to what emanates from these periodicals than to the judgments of their gardeners, would be apt to think that their gardeners were wasting their coals, their Vines, and their money to no purpose.

No gardener need be told that early forcing is deteriorating to Vines; but there are many instances in the country of Vines that have been forced early for a very considerable number of years, and still come up to time with a very tidy crop. I had a house at one time under my charge that had been started in December for well-nigh fifteen years. The first fire was put on on the 1st

January, and it carried a full crop of very tidy little bunches, and cutting was begun in the beginning of May. The minimum night temperature at starting in January was 50°, and at the setting period 70°—the sorts of Vines, Hamburgs and old Sweet Water. It was heated on the old flue system, which is now changed for hot water. The Vines are still doing duty to this day, and no word of either failure, ruin, or death.

Cases of failure have come under my observation, but never in skilful hands. I once saw a house that had been worked as an early house, and they actually managed to kill the Vines in six years from the time of planting; but they were in the hands of one of those men who creep into the profession by the doing of odd jobs about the house. This man worked his way so well that, with the assistance of the housekeeper, he ousted the head-gardener (a man of the highest ability), and stepped into his shoes.

Another instance, that of a gardener who entered on a new charge, and he was to send early Grapes to the family in London; but when the blooming period arrived, there was only one bunch made its appearance in the whole house. Cases like the above are, happily, exceedingly rare, as men skilled in their subject will get through many difficulties. Instead of thinking that the Editor's article in the March number clashed unfavourably with my reply to J. S., I think it may be of much benefit to those for whom it was intended. I am not an advocate of hard firing, but I am opposed to extremes. The Editor drew no line, far less at such extremes as J. S. did his minimum night temperature in the December number, and which is only adapted for Hamburgs, Royal Muscadines, and for structures where people are pleased to take Grapes from when they can get them, and moreover need by no means be termed "forcing-houses." I will now conclude, and as I am (unlike Mr Simpson) a stranger to literary fame, I will preserve my incognito.

BROUGHTY-FERRY.

D. J.



FLORIST FLOWERS.

THE PENTSTEMON.

THIS valuable border-plant is fast rising in the estimation of the generality of horticulturists, which is not to be wondered at, considering its great usefulness as a border ornament alone. Great as are its merits as a mixed border-plant, the fulness of its beauty is much more apparent when figuring in groups or ribbon-borders in the flower-garden proper. There its graceful semi-pendant spikes are most telling. The Pentstemon has the further recommendation of being most suitable for bleak localities: it will grow and flourish in perfection where Geraniums would prove worthless—defying alike wind and rain.

In the different species of the genus there is a strongly-marked diversity as regards height, vigour, colour, and even hardiness. All its species are natives of America, although somewhat widely separated in their geographical distribution. From amongst the oldest known kinds we may enumerate: *P. laevigatus*, a native of North America, introduced into Europe in 1756; *P. pubescens*, from the same country two years later; *P. campanulata* we had from Mexico in 1793.

Propagation from Seed.—The autumn is perhaps the best period of the year to sow Pentstemon seed. Autumn-sown plants are more vigorous, and they will flower more profusely the following summer. The seed ought to be sown in

pans or boxes in light soil, then placed into a close frame without artificial heat, keeping the soil rather dry throughout until the seedlings appear. They may then be placed on a shelf close to the glass in a greenhouse for the winter, under which conditions very little attention is required further than a little water now and then, until the spring has somewhat advanced. When more rapid growth commences in the seedlings, they should be potted singly into small pots, and encouraged to grow freely by every means, so that they may be strong plants at planting-out time, and that they may also flower the sooner.

Plant them out into beds in lines 1 foot apart each way. This is quite enough space for proving seedlings, and ascertaining which of them are worthy of being multiplied.

Propagation by Cuttings.—It is generally found that numbers of young sprouts make their appearance on the main stem a little above the soil. These make the best cuttings; they root more freely than when taken from lateral growths. Remove them from the plant when they are about 2 inches long, and have them dressed and potted in the ordinary method of putting in cuttings. They will root freely inside a shaded cold frame when kept close, with a rather moist atmosphere. When rooted, pot singly into 3-inch pots; and as soon as these are filled with roots, shift them into two sizes larger pots rather than have them get pot-bound before planting out.

General Cultural Hints.—A richly-manured free soil will be found productive both of vigour in the plant, and also quality and quantity of flower. The more robust growths should be supported by means of neat stakes that reach some distance up the stem; but these stakes ought not to reach so high as to interfere with the natural drooping grace of the flower-spikes. The tallest varieties should be selected, and made to do duty in the centre of the bed when a group of sorts has been determined on, bounding these with a ring of those less tall or vigorous in their habit. This forms an excellent bed without the aid of other kinds of plants. Nor is it advisable to plant too closely together; 15 inches apart both ways will suit strong growers and 1 foot the weaker ones.

SELECT LIST OF NEW VARIETIES.

Some of these are truly remarkable advances on known sorts, others none the less acceptable for the new shades, with other essential points of quality sustained as a matter of course.

Omega Niger, throat purplish white, streaked maroon, one of the darkest, quite a novelty. Little Pixie, purplish crimson throat, pencilled white, another novelty. Densa (dwarf), colour bright scarlet, deep crimson throat pencilled with white. Hugh Austin, light blue, white throat, stained dark rose, extra. Tribune, dark rose-purple, like Mazeppa. Wonder, colour light rose-crimson, pure white throat, veined pure, fine, open. Lomaria, pure white, slightly tinged rose, fine spike, profuse bloomer. W. M. Dolben, purplish red, the throat stained chocolate on the lower part, upper portion white, lobes streaked and spotted chocolate, splendid.

VARIETIES OF 1872.

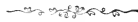
A. St Clair, light carmine throat, brushed, shining purple, distinct and fine. Mrs Rose, clear red, with pure white throat. Floribunda, white throat, bordered brisk red, fine. Robert Fenn, a splendid sort, very distinct, throat plum, with purple tubes. Stephen Wilson, pale mauve, throat white, well expanded, solid perfect flower.

OLDER VARIETIES.

Agnes Laing, deep rose, clear white throat, excellent spike, flowers perfect. Amabilis, purple, throat crimson, extra. Black Knight, deep maroon, throat

broken with white, striking and bold. Bridesmaid, French white, great spike, novel and fine. Delicatissimum, white, tinged rose pink, grand spike of perfect flowers. George Sand, reddish purple, fine. Henry King, brilliant red, throat deep, white shaded red in detached streaks, fine. James Rothschild, massive, widely expanded blossoms of reddish purple, with pure white throat, one of the cream. Lady Boswell, has a handsome spike of rose-pink flowers, throat white, with a well-defined margin of carmine rose, extra. Standstead Rival, scarlet crimson, throat white, delicately pencilled, deep red, grand spike of perfect flowers. W. P. Laird, pale blue, white throat, fine spike, extra. Snowdrop, pure white, most distinct, should be in every collection. Rosy Gem, white throat, ground colour deep rose, very pretty.

A. KERR.



HINTS FOR AMATEURS.—MAY.

DISBUDDING of fruit-trees will now require prompt attention where well-managed trees are desired. Go over outward-growing shoots, just rubbing them off, and stop all gross growths which are likely to take the lead to an undue extent; young trees are generally more in want of this attention than older ones. Newly planted trees may require water at the root; they may also sink in the ground and hang on their fastenings; timely attention may save much injury. Use the syringe or garden engine if insects make their appearance, but not when the trees are in flower. Tobacco-powder may be used with advantage when green-fly may get among the leaves.

Mowing and sweeping of lawns will now take up much time, and whatever other labour may be expended on the grounds, badly-kept grass and walks covered with weeds will overbalance all other good appearances. Beds and borders to receive bedding-plants, whether as hardy annuals, hardy herbaceous plants, or the ordinary bedding half-hardy kinds, should be in good order by well digging or trenching the soil, manure or fresh soil being given as may be necessary. Well-prepared soil, sweetened by working it, and by frost, gives a good start to plants when turned out. The hardiest things should be turned out first. Calceolarias and Verbenas are hardier than Petunias, Heliotrope, Coleus, Perillas, &c. The last two should be left to the last. No plants which are liable to suffer from frost should be turned out before the 20th of the month. Injudicious mixing and complicated shapes are some of the evils which are common at the present time. Some admire glaring masses, while others are strongly opposed to them. Distinctness and simplicity of design are generally most telling. Plants for turning out should now have plenty of air, but exposure to cold drying winds is to be avoided. When planting there is nothing gained by turning the plants into sodden soil and giving drenchings of cold water. When watering is done with planting it should be poured

over the roots and the dry warm soil drawn over it. If the soil round the roots is in nice moist condition, much watering will not be required. A good soaking all over the planted ground when weather is warm, and the hoe used freely over the surface as soon after as can be done, is the best treatment for the plants. Rare kinds to be grown for stock should be planted in good soil in any space where the plants will not be overlooked. They need not be allowed to flower very freely when plenty of cuttings only is wanted. Plant out a good stock of Violets; water them well. Flowering-plants in pots will now be numerous. Airing, shading, watering, turning round to light are some of the daily important matters. Such plants as Pelargoniums, Fuchsias, Calceolarias, with their pots well filled with roots, may be liberally supplied with clear manure-water. After hot dry days sprinkling overhead all plants will cleanse and refresh them; all watering in structures may now be done in the after-part of the day. Primulas, Cinerarias for next season's work, may be kept shaded from strong sun; a frame turned to the north suits them well while making their growth; sow more seed. All forced shrubs when done with should be hardened carefully before turning them out. They should not be starved if required for work next season. As Azaleas, Camellias, Cytisus, Acacias, and similar flowering-plants are done blooming, let all flower-pods be cut off, any necessary trimming done, and let them be potted and placed in a growing atmosphere to make their wood, syringe them freely, and when enough growth is made they may be hardened with more light and air to form their flower-buds. Clarke's insect-destroyer syringed on Azaleas, first laying the pots on their sides, will keep thrip, &c., in check. Balsams, Globe Amaranthus, and Cockscombs, must have plenty of pot-room; a gentle bottom-heat with fresh air makes growth sturdy. Heaths and New Holland plants may be placed out of doors in a shady position where worms cannot get into the pots. This may be done about the end of the month; smaller plants of these are the better of a frame or pit to use the lights for shelter from drenching rains. Before plants of any kind begin fresh growth they are generally allowed to have a period of rest, if it has not been had during the flowering time. Then any necessary cutting back is done, and when young growths begin to appear fresh soil and larger pots are given, but often the ball of soil is reduced and replaced with fresh stuff in same pots after they have been washed. Good drainage must always have attention. Chrysanthemums will now be making rapid growth. A general stopping may be given. Some good growers never stop more than once. Cuttings for small pots may be put in; layers may also be put into small pots. Give the roots plenty of water and sprinkle the plants overhead.—M. T.

GRAFTING VINES.

I, AS also, I have no doubt, many of your readers, felt interested in the article describing Dovetail Grafting, in the April number of the 'Gardener.' I confess that to me it was new, but doubtless among the craft there are various modes of performing the operation of grafting, and it is most natural that the mode which one has found to be the most successful is that which one is partial too. I may describe a mode of grafting the Vine which I have adopted for several years, without, I may say, a single failure, and for want of a better way of describing it, I shall name it Tongue-and-wedge Grafting. The operation is performed thus: a young rod is run up from an established Vine, the nearer the root the better (as in the course of two or three years at the most this rod will be substituted for its predecessor); the following spring the particular variety to be worked upon the Vine is taken, and with the knife a thin slice of the bark and wood is taken off the graft on the side to be fitted into the rod, and the graft is prepared to fit into the tongue or wedge an inch or two below the topmost bud, and the operation is completed by being bandaged and clayed, with a little damp moss put round it in the usual way. I have preferred that the stock should be in advance of the graft. After growth takes place the top is pinched out of the shoot issuing from the topmost bud on the stock; this has the effect of concentrating the force of the sap into the graft, and when the latter makes a growth of 6 inches the top that was pinched is now broken off; the graft will now grow vigorously; so much is this the case, that it produces fruit the following season. I do not know of a better way of renovating old Vines whose roots have been got into a healthy working condition: by this means I have new and improved varieties introduced without being obliged to have recourse to the clearing out of old Vines. I now give the names of a few varieties that have been treated in the way above described.

A Muscat of Alexandria upon a Sweet Water stock; and in connection with this particular variety it may be interesting to mention that the second year after the grafting was performed, a number of the lowest buds remained dormant, although quite plump, and one would have thought every bud would have produced a shoot (the flow of the sap being so great to the growing point is the only cause that I could assign), until below, on the original stock, a shoot of Sweet Water made its appearance; it was allowed to remain, pinched back, however, to the fifth bud, the consequence being that the buds which remained dormant burst the season following into moderately vigorous shoots, so that the rod from top to bottom has now spurs at regular intervals, and equally fruitful. The second variety that I shall mention is Mus-

cat Hamburg on a Black Hamburg stock: the bunches set uncommonly well and require as much thinning as a Black Hamburg. The third is a Frankenthal on a Black Hamburg; and, fourth, a Mrs Pince Black Muscat, grafted last year and showing fruit upon every shoot this season. I have a few more varieties, but as they have been in-arched last year I shall not extend this paper any further.

H. ROSE.

GRANGEMUIR GARDENS.



HYACINTHS WORTH GROWING.

SUBJOINED is a list of the best Hyacinths exhibited this year at the London shows, and also at the Exhibition of Spring Flowers at the Crystal Palace by Messrs Downie, Laird, & Laing, of Forest Hill:—Alba Maxima, Grandeur à Merveille, Gigantea, Mont Blanc, Blanche, Formidable, in whites; Fabiola, Howard, Koh-i-noor, Cavaignac, Von Schiller, Garibaldi, Solfaterre, and Veuirback, in reds; Lord Melville (new, dark-blue with white eye), King of the Blues, Charles Dickens, General Havelock, Marie, Grand Lilas, Prince of Wales (new, fine large bells), Prince Albert of Prussia (the finest black-blue in cultivation), in blues; Ida, fine yellow; Haydee, fine violet; Lady Twyll and Lord Cairns, promising new red flowers; General Pelissier, Macaulay, and A. Prinsen.

The above list includes only varieties that can be relied on. Of course, the new varieties want proving. There is great variety of colour, and great variety of price.

I think the Hyacinth is generally grown in a compost of too close a character; a rich and very sandy compost suits them well,—the grittier the sand is the better. It is also well to bear in mind the hardy character of this flower; keeping it too much shut up only produces lanky foliage. Never on any account allow the plants to become dry, but keep them well supplied with water: in forcing, a temperature of 55° to 60° suits them well.

Messrs Downie, Laird, & Laing are to be congratulated for the fine display of Tulips, Crocuses, Cyclamens, Primulas, &c., which, in addition to the large collection of Hyacinths, rendered the west transept of the Crystal Palace quite gay during the fortnight the Exhibition was held.

We considered it well worth a visit, and trust that this the first exhibition of spring flowers will be continued in succeeding years by the firm.

R. P. B.

DEUTZIA GRACILIS.

No doubt this plant and its varied qualities are well known to the professional gardener, but I fear that amateurs know less about it as a forcing shrub. Let that be as it may, few of our hardy plants submit with more freedom to artificial heat, during the dreariest months of winter, with but a slight advance of temperature. Much as we admire the Lily of the Valley, the flowers of this plant are in no way inferior, are similar in shape and colour, of longer duration, and closely arranged on long racemes. Propagation is so easily managed that the merest tyro can have little to fear. This much, however, I may say, that half-ripened wood roots freely when subjected to a high bottom-heat. Subsequent treatment merely consists in having the nurslings put into small pots, hardened off, and ultimately transferred to the open ground. As old plants produce suckers freely, they may be divided *ad libitum*, and treated as young plants. But unless special circumstances require it, home propagation is scarcely necessary, as plants fit for forcing can always be purchased for a few pence. A flower is always produced on the preceding year's wood; the old shoots should be cut off close to the ground, and the plants then turned out. This will cause them to grow stronger than if kept in pots. In addition, we have *Deutzia scabra*, scarcely inferior to *gracilis*, with the exception that it does not flower so abundantly. Still it deserves our special attention, and well repays our trouble.

Wherever flower-forcing is carried out to some considerable extent, a house with the convenience of bottom-heat should be specially set apart for this purpose, else less or more failures will certainly occur, traducing the gardener's abilities, and depriving the plant of its proper share of attention.

The general plan is to make use of early vineries, peach-houses, or any available space where a few spare feet can be spared—a reprehensible system, that cannot be too strongly discouraged, introducing among fine crops red-spider, green-fly, and a host of other pests. I am sure it would be a great advantage to many were some qualified person to give us an annotated list of shrubs best suited for forcing.

ALEXANDER CRAMB.

TORTWORTH.

[Will Mr Cramb kindly favour us?—Ed.]



PEACH CULTURE UNDER GLASS.

PROPAGATION AND SELECTION OF TREES.

THE propagation of Peaches and Nectarines being a process almost entirely confined to nursery-gardens, it is not my intention to enter very elaborately into the details connected with it, for very few growers or forcers of the Peach are ever called upon to propagate their own trees. For the following leading particulars connected with the subject I am indebted to Mr Pitman, who for half a century has been connected with the firm of Messrs Osborne & Sons, and who for the greater portion of that period has had the management of the fruit-tree department; and all who are acquainted with the quality of his productions will accept him as an authority of the highest order in the propagation of Peaches and Nectarines.

The stocks used for budding the Peach and Nectarine on are the Mussel plum, and the Brompton or Mignonne plum. The stocks are raised by layering in the ordinary way. In preparing them for budding, they are dressed and cut to a length of about 2 feet, and planted out in autumn or early winter in lines. The following autumn they are taken up, assorted, and again planted in lines, but wider apart than the previous or first year. The succeeding summer, generally from the middle of July to the middle of August, they are budded with the desired varieties of Peaches and Nectarines. The following summer the buds make their first growth, and the trees are termed "Dwarf Maidens." In the autumn of the same year they are taken up, root-pruned, and planted in lines 4 feet apart, and 2 feet from plant to plant. Their growth, which generally consists of one strong shoot, is allowed to remain intact till the following spring.

They are then cut back more or less closely, with the view of securing the production of one central and two lateral shoots right and left; consequently not less than three buds must be left in the process of pruning. The tree is thus with its three growths termed a one-year-trained tree. In the spring of the following year each of these three shoots is cut back to from three to four buds from the base, so as to secure a tree with from nine to ten shoots. The tree having perfected

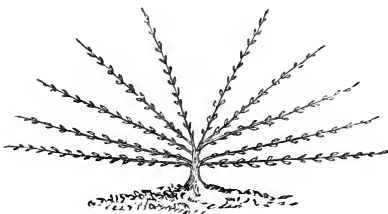


FIG. 11.

the growth of these shoots, it is, as far as its nursery career is concerned, a full-trained tree (fig. 11), and is ready for being transferred from the nursery-rows to the Peach-house trellis.

In the case of new varieties, the process of producing trained trees is hastened by pinching the top of the first year's growth

from the bud after it attains a length of two or three inches. This forces the production of young laterals which are thinned out to a central growth, and two laterals, one on each side.

In producing standard trees, the treatment of the stocks is precisely the same as that pursued in the case of dwarfs up to the time for budding, when, instead of using the Peach or Nectarine bud, a well-developed vigorous top-bud of the stock is inserted at the base of the stock, which bud throws up an earlier and more vigorous shoot than the weakly buds generally formed at the base of the stock produces. This bud is inserted as close to the ground as practicable for the sake of neatness in the future stem. The following year the stock is cut back to the bud, and all growths are rubbed off, excepting the produce of the bud, which under favourable circumstances rapidly attains the desired height. The following year the stems are budded with the Peaches and Nectarines, and in due course transplanted on walls and fences. This double-budding produces a much finer and earlier growth for forming standards with stems from 4 to 5 feet high. Long observation and experience have taught Mr Pitman that certain varieties thrive and grow much better on one stock than on another. The following varieties succeed best on the Mussel plum :—

PEACHES.	NECTARINES.
Noblesse.	Elruge.
Barrington.	Violette Hative.
Royal George.	Red Roman.
Violette Hative.	Pitmaston Orange.
Late Admirable.	Hunt's Tawny.

The Brompton or Mignonne is found the best stock for :—

PEACHES.	NECTARINES.
Gros Mignonne.	Balgowan
Bellegarde.	Imperatrice.
Stirling Castle.	Fairchild's Early.
Royal Kensington.	Duc du Telliers.
Royal Charlotte.	
Malta	

The Almond bears a greater affinity to the Peach and Nectarine than the Plum, and doubtless if our climate were more genial it would, as in France, be the most suitable stock. As a proof of this Mr Pitman informs me that some Peach trees raised on the Almond stock that he had to do with succeeded admirably for a while till an unfavourable season caused them to succumb, while the same varieties on the Plum stock endured the ordeal unscathed. The French growers are also partial to the St Julien Plum as a stock for Peaches and Nectarines.

In selecting young trees, it is always most satisfactory, both to the nurseryman and the buyer, that the latter go to the nursery and choose

for himself. Avoid trees that have stood long in the nursery rows, and that have been frequently cut hard back, and choose those having from eight to ten strong, well-ripened shoots. See that the union with the stock is perfect and free from gumming, and the stem healthy and growing-like, having no sign of being bark bound.

PLANTING.

The border and trees being in readiness, the operation of planting is a very simple one. The first thing to decide is the distance at which the trees are to be planted. I am averse to thick planting for permanent trees. To restrict a Peach tree planted in a good Peach border is very inadvisable. They should have plenty of room to develop themselves. For a Peach-house wall 35 feet long two standard trees on the back are quite sufficient, thus planting them 9 feet from each end of the house. On the front trellis other two dwarfs are enough. Should it be an object to get as much fruit as possible in a short time a temporary tree may be planted, one between the two permanent ones and one at each end, to be removed as the two permanent trees require the space. In the case of the front trellis, the temporary trees should be standards so as to clothe the upper part of the trellis for the time being. Before planting them carefully examine the roots, and shorten back a little any that are gross and strong, and cut away all bruised or broken parts. Turn back the soil sufficiently to allow the roots to be stretched fully and regularly out on the surface. Place the boles of the trees so that they will be three to four inches clear off the back wall and the front trellis work, so that they may have plenty of room to swell without pressing on the wall or trellis. Cover the roots carefully with the finer portion of the soil to the depth of 6 inches, making it rather firm. Fix the tree loosely to the wall, and water the roots through a rose.

The season I prefer for planting is autumn, say the beginning of November or end of October, when the leaves are dropping off the trees. Planting can, however, be performed, and often is successful, from October to April. In planting Peach-houses, where healthy trees exist on the open walls, it is a good plan to lift some that are of considerable size, say planted five or six years, and transfer them to the Peach-house. I have done this and got a good crop the following season. Every fibre should be carefully saved in the process. By this means a Peach-house can be furnished with fruit without the loss of a season or a crop.



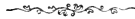
HALF HARDY PALMS.

THE many fine varieties of these in cultivation now are great acquisitions for room-decoration, and for grouping or standing singly outdoors. Their noble appearance, and light and graceful forms, and their great diversity of character, enhance their value. When large enough many of the varieties can be set out for the summer with good effect when judiciously placed. Where there is convenience for wintering them many more of the Palm tribe should be used in flower-gardens, especially when they are well sheltered, as high winds soon disfigure the majority of them. All are of easy growth, delighting in a rich loam, with a few bones to keep the soil porous. In the case of any plants that are getting too large for table work, this is a good time to give them a liberal shift, paying particular attention to the drainage, which should be carefully and well done. If they are put into 11 and 12 inch pots, large plants will be the reward. Scarcely any plant gets so large in the same sized pot and looks healthy for a long time, as Palms do. After potting them let the plants be put into a vinery or peach-house at work, not overwatering them for some time until they have commenced to root freely, after which they must not be checked for want of it, allowing them to stand under glass all this season in a moist growing temperature. Although they will stand a large quantity of rough and cool treatment, still they enjoy liberal culture and soon make fine large plants for standing about in summer. Grown on as recommended the first year, and by gradually hardening them off as the autumn approaches, they will stand all the winter anywhere if the glass does not get below 40° and take no harm; and if there be large demand for room-decoration or where there are entrance-halls or staircases to be filled with plants, they are invaluable. In such positions there is not much light and little ventilation, and there is no other class of plants to equal Palms for such places. After having done duty in this way through the shortest of the days in winter, and if desirous to get them a little larger for placing out of doors in summer, if they have been potted the previous year, nothing will be needed but to put them in a vinery starting about March, where they can stand until the latter end of May, when hardening-off should commence, so that by the time all the heaviest of the bedding-out is done they will be ready to be placed in their allotted places. When in small pots, and it is wanted to keep them so, if very much pot-bound, reduce the balls considerably; put them in clean pots with good drainage, making the compost pretty rich, and ramming it quite firm to get in as much soil as possible in the pots, as the pots will be small in proportion to the size of plants. Let them be placed in a close moist house for a short time,

shading from bright sun until they have taken with the fresh soil, when more light and air should be given: they will then require copious waterings, with frequent syringings, until about the beginning of September, when the heat should be gradually withheld, and they may stand in a light airy house, or be placed in the greenhouse amongst Fuchsias and Geraniums, where they look well, and they can be withdrawn for room-decoration when necessary. Many of those that are considered tender when treated in this way stand house work very well, but I have not tried them out of doors. After having done duty for a short time in the house, let all have a good sponging and syringing with clean water; this will be found beneficial, as quantities of dust will have lodged on the leaves. The following list are all good and stand this treatment admirably

Areca Baueri.	Lantania Borbonica.
" lutescens.	Phoenix sylvestris.
" sapida.	" reclinata.
Chamerope excelsa.	" tenuis.
" fortunei.	Livistonia altissima.
" humilis.	Dicksonia squarrosa.
" palmetto.	Seaforthia elegans.
" tomentosa.	Livistonia subglobosa.
Corypha Australis.	Thrinax elegans, fine for house only.
Cycas revoluta.	" tunicata.

A. H. T.



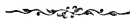
GRAPE THINNING.

It may appear out of place to call attention to a process which has been in practical operation ever since Grape cultivation was attempted. Grape thinning, though not requiring great muscular exertions, is work that requires much mental calculation, as bearing a direct influence on the ultimate perfection of produce. Large vigorous bunches may be produced, the finest flavour, colour, &c., gained, that nature and art combined are capable of accomplishing; yet where is the symmetrical beauty so desirable, and absolutely necessary, to approach an ideal in Grape-growing when all the rules of right thinning are flagrantly violated? What is more unsightly than the result thereof on our exhibition tables: those lank and disordered masses of Grapes, which, if thinned with a judicious application of forethought, would have formed praiseworthy, handsome, proportionate bunches? The bare shanks and loose form of such are rendered still more obviously defective when associated and contrasted with one of those rigid examples whose crowded berries are so offensively clustered together as to give the impression that the principal aim is an individual test of skins. The most essential requirement, and a sure guide against such extremes, is a thorough knowledge of the one size that different varieties of Grapes attain. Varieties with short foot-stalks, of which the Black Alicante is the type, require most thinning, while such as Hamburgs, and those with longer foot-stalks, are not so liable to become compressed, though they may appear a little crowded at first. As swelling proceeds they are pressed upwards,

and one berry makes room for another. When set, and before ever thinning is attempted, each bunch should be firmly syringed with clean tepid water, allowing them to become quite dry again before thinning is begun. This syringing removes all decayed blooms, unfertilised berries, and other adhesive matter, more perfectly and quicker than the scissors or any other appliance, and not only accelerates and renders more easy the thinning of all varieties, but Muscats and other shy-setting kinds can often be sufficiently cleaned in this manner, so that no more thinning is required.

Where a large houseful has to be thinned with little means of accomplishing it quickly, thinning should start immediately they are set, selecting the thickest set bunches, and relieving them of all that is likely soon to obstruct the swelling of the permanent berries. Gone over in this way as a preliminary thinning, the second and final thinning should be very carefully performed, taking out the smallest berries, and leaving all as equal in size as possible. No bunch should ever be allowed to get so crowded before thinning that the scissors cannot be conveniently inserted without being in danger of piercing the berries: those so punctured sometimes do not show their blemishes until swelling is well advanced, when they have to be cut out with the hazard of spoiling the symmetry of the entire bunch. With the exception of Lady Downes, no allowance should ever be made for thinning out a few berries if too thick just before they are fully swelled. Large blanks are thus formed which are rarely nicely filled up again. Lady Downes should be left rather thick until after the stoning, that a reserve may replace those which generally decay through scalding at this critical period. Rust on Grapes is said to be caused by contact with the hands, hair, &c., while thinning. This, I think, is not correct. Such friction is, however, not conducive to their appearance. Grapes brushed even while thus small in size bear traces of tarnished bloom at last. A good way of steadying the bunch or supporting the shoulder while thinning, is to use a small forked piece of wood in the form of the letter Y, which can be easily slipped in between the berries without touching them with the hand, or in any way tampering with their bloom. To prevent the berries from falling to the ground and mixing with the soil when thinning, a circular wire 18 inches in diameter is covered with a piece of canvas in a scoop form tapering to a point, four cords are attached to the wire at equal distances, knotted together at whatever length is desired, and united to a hook to suspend it from the trellis, so as to come underneath the bunch and receive all the thinnings.

J. M.



WINTER-FLOWERING ORCHIDS.

LYCASTE SKINNERII.

SOME Orchids can only be successfully cultivated where a high temperature is maintained; and in addition to this, they require much extra care and attention. Others, however, grow luxuriantly in a moderate heat, and can be grown to perfection by any ordinary plantsman, since they require no more coddling than do Azaleas or Camellias when making their growth. In the latter class we may include the beautiful and free-flowering species to which this paper is devoted. If this plant has a fault, it is in being cheap and too easily grown;

but many will rather consider these points a decided advantage, and to them more particularly I would address the following notes on its culture. Good, strong imported plants may be bought by the dozen at a few shillings each—cheaper, in fact, than the better or rarer kinds of stove plants and ferns; while established plants may be obtained for a slight additional outlay. In the case of imported plants there is always the possibility of obtaining fine varieties, this being perhaps the most variable of all Orchids, if we except *Cattleya Mossiæ* and *C. Trianae*. The flowers of this species are thick and wax-like, lasting five or six weeks in bloom, often longer, and their delicate perfume is an additional attraction. The colours of this species, as shown by its innumerable forms, vary from the purest of whites to the deepest crimson imaginable; and in some cases nearly all the intermediate shades and tints may be found in a single flower. This plant has frequently been recommended as a “drawing-room” Orchid; and it certainly is a charming embellishment to the most superb apartment when in full flower; and the pleasure of having it in such positions may be enjoyed without any apprehension of the plant itself sustaining material injury, supposing that ordinary precautions be taken to exclude frost in sharp weather. I saw a fine little specimen the other day on a drawing-room table bearing twelve flowers, and its owner assured me that it had been in the room a month, and that he expected his gardener would allow it to remain another fortnight at least. This plant was protected from the aridity of the atmosphere and the effects of the gas by being covered with a glass shade; and the pot top being covered with fresh green Sphagnum and Selaginella, the whole arrangement had a very pretty effect. There are many more Orchids that may be used in a similar way, though few last so long as this in flower. *Lycastes*, like most other Orchids, should be grown in small pots. Over-potting is always a mistake; more especially is this the case when Orchids are concerned, and it should be avoided as much as possible. The pots must be well drained by being at least half full of clean crocks or lumps of fresh charcoal; and a layer of moss being placed above these, the compost may be added. This should consist of fibrous peat in small lumps, and living Sphagnum, to which a few broken crocks and a little white sand may be added. Keep the bulbs well up above the rim of the pot, and finish up with a layer of fresh Sphagnum moss, the latter when growing adding considerably to the economy as well as the appearance of the plant. When making their growth, *Lycastes* must have an abundant supply of tepid water; and occasional syringings will be found beneficial in assisting their growth and in keeping insect pests in check. They should never be thoroughly dry at the root, nor should their pseudo-bulbs be

allowed to shrivel, since a shrivelled bulb will never produce such fine flowers or strong growths as will those that are fresh and plump. When well grown, *Lycastes* are very valuable for conservatory decoration, and help to give variety to the supply of cut-flowers. Specimens of *Lycaste Skinnerii* have occasionally borne from thirty to fifty flowers. I recently saw upwards of a dozen nicely-bloomed plants in the collection of O. O. Wrigley, Esq. of Bury, Lancashire. These had been grown by Mr Thos. Hubberstey; and the following table speaks well of the results obtained by his system of treatment, which does not differ materially from that advocated above:—

1 FLOWERING BULB EACH.		2 FLOWERING BULBS EACH.	
No. 1	bore 7 flowers	No. 1	bore 14 flowers.
” 2	” 7 ”	” 2	” 20 ”
” 3	” 14 ”	” 3	” 14 ”
” 4	” 9 ”	” 4	” 18 ”
		” 5	” 19 ”

This gives a total of 122 flowers from 9 plants, which collectively have only 14 leads (*i. e.*, flowering bulbs). Some of these flowers were models in form, size, and colour; while next year there is every reason to suppose that the numbers here given will be nearly doubled. This plant and the valuable *Dendrobium nobile* will amply repay any one who cultivates them for their winter's crop of flowers. The *Dendrobium* is perhaps the most useful, as its flowers being smaller are better adapted for gentlemen's "button-holes" or ladies' bouquets. The *Lycastes*, however, come in handy for vases and dinner-table decorations, having a very distinct and handsome appearance when grouped with graceful Ferns and Lycopods. Some of the lighter coloured varieties with small flowers form artistic adornments for ladies' hair. For this latter purpose take a small flower and a bud, arranging a frond of *Davallia* or *Adiantum* behind them, and they will look very pretty, and are not so common as Camellias.

In its native country (Guatemala) this beautiful Orchid is largely used in the decoration of the altars and in religious rites. It is an old inhabitant of our gardens, having been introduced thirty years ago from Central America, but its cultivation has not been general until the last few years.

Robert Warner, Esq. of Broomfield, who successfully cultivated many beautiful Orchids under the partial shade of his Grape vines, found this species to luxuriate in such a position; and a recent writer in a contemporary hopes the day is not far distant when this plant and some of the *Odontoglots* shall be grown in cottage-windows side by side with *Fuchsias* and *Pelargoniums*.

F. W. B.

GOSSIPY GLEANINGS FROM THE CONSERVATORY.

AMARYLLIS SUPERBA.—I may safely remark that every conservatory without a plant of this lacks a most effective feature in winter—superb in summer from its massive flag-like leaves describing a contour of symmetrical exactness. They rise erect for some distance opposite each other, then bend like two semicircles met over the pot. The flowers appear in winter: they are brilliant orange-scarlet, veined with deeper red. Inside the cup is stamped with maroon over the capsule, which extends up the petals some distance, and terminates in star-like points. Each flower measures about 7 inches diameter, and is in substance solid and leathery, lasting in a fair state of perfection for five weeks. The first set of flowers are generally succeeded by another set, when it is necessary to replace the plant in heat to expand them.

Its cultural wants are simple in the extreme. The temperature of an intermediate house suits it perfectly until the flowers begin to open, when it may be consigned to a sunny aspect in the conservatory. It delights in ample scope for its roots, and thrives well in a compost principally of light fibry loam with a slight admixture of sharp sand and leaf-mould.

Another plant of scarcely less importance, and therefore deserving honourable mention, is *Lasiandria macrantha*—a noble plant without question. True, its flowers are somewhat evanescent in duration, but this is fully compensated for in the constant succession upheld for half the year. It is startling when one takes into account the immense forces that are of necessity constantly in operation to produce the number of immense flowers produced by a single plant in one season. Some of those flowers are not less than 5 inches in diameter, of an unusually thick substance, in colour shining indigo, suffused with a rosy violet gloss. The foliage is larger, simple ovate, corded lengthwise by the veins, and is of a satiny shining texture. The flowers are produced on the tops of the young shoots, which throw out lateral growths in their turn, and supply a constant succession of bloom. Although quite at home in the conservatory in summer, this plant requires a slightly higher temperature as the autumn approaches, or it will stop growing, and probably suffer in the foliage. It soon recovers when put into a more genial heat, but it is quite unnecessary to put it into a stove; the intermediate house will suit. In habit *L. macrantha* is somewhat shrubby, and of rapid growth.

When writing about *Rhododendrons* last year, I think I noticed *R. floribunda*. This variety forces as freely as other early sorts; and what an acquisition it is to those that have bouquets in number to provide! Its white flowers are most telling among others. By the way, I may here refer to the *Rhododendron* recently named after the Princess Louise, at her own request, on the occasion of her Royal Highness's visit to the Winter Gardens, Edinburgh. *R. Princess Louise* is a seedling raised from seed brought from India twenty-three years ago. It flowered for the first time last winter, and pleased every one who saw it with the quality of its flowers, as well as the time which they lasted. I do not know any other *Rhododendron* that keeps its blossoms so long in perfection. Its trusses are much above the average size, and are boldly seated on handsome deep-green foliage. The individual pips are perfect, as little drinking-cups massed closely, without being crowded, together. Each group forms three parts of a ball. The upper portion of the petals is of a brilliant rosy peach, changing to delicate rose towards the base of the corolla. The stamens are made agreeably prominent from being perfectly black, the anthers of which shortly open and emit their white pollen, that is seen clinging to their lips,

thereby producing an agreeable feature in the flower. It may be assumed that *R. Princess Louise* is hardy, as our experience of it has testified. Last year, after making its growth in the conservatory, it was placed out of doors, and stood there until well on in October, when we had it brought back, where it opened its first flowers in February, without any other assistance than a rather low greenhouse temperature.

Perhaps in those fast-going times some of the less experienced of our readers will not object to my naming two or three Indian Azaleas which force readily. It is something to know this where there are so many that will not force to any purpose. *Azalea narcissiflora*, a pretty double white, presented us with its first flowers in the last days of December. In close succession came old *Indica alba*; next the hardy *A. amœna*, small rose-magenta flowered; then *A. amœna hybrida*, the same in every sense, but with larger flowers. *A. exquisite*, rose-lavender, margined white, in the end of January; as also *Schavanhorst*, the flowers of which are beautiful rose-purple, of exact outline. Mrs Turner is another handsome early flowerer, of the pink type, closely pressed by *Roi Leopold*, a dullish red, but well-formed flower. *Souvenir de l'Exposition*, a violet bluish, freckled with rose and laced white, is one of the first water, but rather later. These were all flowered in a temperature ranging from 55° to 60°.

A. KERR.



BEGONIAS FOR ROOM DECORATION.

BEGONIAS are most useful for the decoration of sitting-rooms, being highly effective in appearance, and remaining for a long time in good condition. The latter a very important point, as many plants that to all appearances would be suited admirably for rooms when they are taken from the greenhouse, will be found to droop and be anything but ornamental; but this is not the case with Begonias—they will stand a good deal of knocking about. I have some which I keep for this purpose: they have been night after night in hot rooms lighted with gas, and still they seem to keep wonderfully fresh. I grow my plants in a mixture of loam, peat, sand, and well-decomposed manure. They are in pots about 5 inches across, as this size will fit in china-pots or cases of paper, which every one may use for hiding the pot in which the plant is growing. In summer I give them a good supply of water. I give them some all the year round, but not so much as in summer. Some people I know water them overhead, but this I do not think suits them. I have given this practice up, and find the leaves do not so soon turn rusty. Every year I replot them, shaking the old soil well from their roots, and after they have been repotted, place them in a little bottom-heat, so as to start their roots afresh.

A. H.

UPPER NORWOOD.

ERANTHEMUM PULCHELLUM.

THIS is an old-fashioned winter-flowering stove plant, which is not quite so much grown as its merits entitle it to be. It is exceedingly easy of cultivation. The following directions followed out will secure success. After it is done flowering in spring cut it back, and place in a vinery at work. When started into fresh growth, shake out in the same way as is practised with Pelargoniums, and re-pot in a smaller-sized pot, using, in preference to others, a compost of fibrous loam and sand. When the shoots have grown long enough to make cuttings of, insert as many as may be required round the edges of 4-inch pots: they soon form roots in a warm temperature. Pot off into 5-inch pots, one plant in each; they will flower well in this size: or they may be treated to a further shift into 7 or 8 inch. Large plants may be grown in 16's—this is a handy size; and if the plants are firmly potted, as all plants should be potted, they hold a large quantity of soil for the nourishment of the plants. In the summer months, they may be grown in a cool house, but ought to be taken into a stove temperature in August to have the flowers fine. They require an abundant supply of water whilst growing; three or four of their pretty wax-like flowers, backed by one of their leaves, make a nice button-hole bouquet. To have the plant look well, the flowers which have withered should be picked off every morning.

R. P. B.



A FEW WORDS ABOUT WALLS AND WALL TREES.

IT has often appeared to me that the common mode of training fruit-trees against walls might well be modified with great and beneficial advantages. In advancing such a statement, many will be ready to ask upon what grounds I put forward such an opinion, and what fault there is to be found with the common mode of training fruit-trees. The two most common ways of training fruit-trees are the fan—which many think is the most natural, and the best way to properly develop the capabilities and bring into full play all the different parts and resources of the tree.

The other is the upright central stem from the root, and having horizontal branches leading off at right angles from the upright stem, and as far as possible leading off at regular distances apart from the bottom to the top of the wall. I am well aware that there are many excellent examples of both these modes of training to be seen where gardening is carried on with skill and spirit in different parts of the country, and many of them look well when the trees have furnished the wall; but what a long time many of them take before they do so. I know some gardens where the wall-trees are planted from 10 to 15 yards apart (and some at greater distances), and the wall fairly furnished. Well, but what a length of time it took to grow pear-trees to such an extent, and what an amount of care had to be bestowed upon them, even before they could attain to such dimensions; and when anything injurious to either the main stem or roots of the tree attacks one such large tree so as to cause its death, what a blank is caused.

What I am about to state is not with any view to supersede the above modes of training entirely, but more with a desire to remind the readers of the 'Gardener' that there is often a great waste of time as well as of fruit while waiting the growing of trees trained in either of the above modes. Most people after planting choice fruit-trees become anxious to taste fruit from them, as soon as

such can be had, having due regard to health and the growing condition of the trees, rather than keep on growing and training them for the next generation. What I would suggest for consideration to those who may have an opportunity to put such into practice, is this—where any new gardens are in contemplation, let the garden-walls be built to a good height, as no good, but positive injury, results from walls being low, for other reasons as well as a means to allow the trees planted against them to more fully develop themselves to near their natural extent. It certainly is a very great mistake wherever this is not kept in mind.

Supposing a good Pear-tree, when growing upon a good sound and healthy stock, would grow when planted as a standard to 24 feet high and some 16 to 18 feet diameter; but supposing the position in which it is planted will not allow of the tree growing to half these dimensions, and then whenever this is the case, unless those who may have the care and management of the trees well understand what they require, so that the roots and top management are made to work, as it were, hand in hand, the results are rarely satisfactory. What we mean by root and top action often not working well together, may be seen where the walls are low, and the soil of a good healthy and productive nature; in all such cases, unless the manager is well versed in root management, there will in all probability be a great inclination in the trees to produce breast wood all over, and cutting in with the knife (if this is all that is done) seldom brings the desired result; less breast wood and more fruit-buds is what is desired, but with low walls and a strong soil, how is this desired end to be obtained? Not so much by continually using the knife, as by attending to the condition of the roots, either by lifting the tree entirely and cutting away all strong bare roots, or, as we have sometimes done, lift only one half of the roots and replant them into some fresh and healthy loamy soil, and if possible let it be from pasture land, where it has been many years under grass; this may be the safest course to adopt with large trees that may never have had any root-pruning; but when this is done to young trees and before they have attained to much size, and their roots have not wandered far, the whole of the roots can be lifted with perfect safety.

I have seen a lot of pyramidal Pear-trees that had been subjected to a regular lifting every second year, for a number of years; under such treatment they required scarcely any pruning, and their roots became quite a picture of small and healthy feeders. Of course those that did not incline to grow useless wood were not lifted so frequently as those which continued to do so. When all the ground is well loosened and not a mere hole like a flower-pot, they do not suffer to any great degree from lifting, especially if any short half-rotten straw or long dung is put over their roots in hot weather, thus keeping the soil more uniformly moist, and encouraging the roots to keep near the surface, and of course to derive more benefit from the action of the air than when they are allowed to descend deep into the soil. This should be avoided as far as possible.

YOUNG WALL TREES.

Where walls are a good height—say from 14 to 18 feet—instead of planting the trees at from 10 to 15 yards apart, I would recommend to get maiden trees,—that is, one growth from the bud or graft, and plant these at 2 feet apart along the wall, then cut them back to two eyes, training one off at right angles on each side for about 6 inches, thus allowing a foot or thereby between every branch while being trained up the wall. Strong growing sorts might be allowed

to have four upright leaders, thus having two trained off on each side. Now it must be very plain to every one that such a mode of planting fruit-trees would be a means of soon covering the wall, and at the same time one can have a greater variety of fruit in a given space, and by well attending to root-pruning there need be no unproductive or rampant growths allowed on the trees. We have seen this tried on a limited extent, and it answered remarkably well, instead of waiting for years, as in the old way of growing trees, to see a good wall moderately filled with productive trees. In this way any one may have a wall 14 feet high pretty well furnished with fruitful trees in from 4 to 6 years. Of course much depends on soil, situation, and climate.

We have seen this done with Peaches over a trellis in a Peach-house, and the second season after planting, a trellis over 6 feet high well covered with splendid bearing wood. When the price of a few maiden trees is taken into account, it sinks to a mere nothing when compared with the results, and this is far better than the system of pot-culture, with all its liabilities to over-dryness in summer, and consequent dangers from red-spider, thrip, and insufficiently developed leaves, resulting in crippled growth and unfruitfulness. This system, as compared to pot-culture under glass, requires far less careful attention, always looks cleaner and neater, and may be used to any extent where at first a little expense can be allowed for a good return.

G. DAWSON.



AN AMATEUR'S EXPERIENCE IN PRIMULA GROWING.

HAVING a small greenhouse and forcing pit, I try to have a bloom all the year round ; and to obtain this my attention was called to the Primula. The first time I tried to grow them from seed I was rewarded with good plants ; they grew well all summer, but when winter came they got dull-like, and began to damp away, until they all died. I afterwards found out the cause ; they had been watered rather too freely. Finding I could not do without the Primula, I tried again, and was successful this time, paying great attention to the watering.

Should any amateur wish to get up a stock of these beautiful inmates of the greenhouse, I venture to note down my experience ; it differs a little from what I have read. I buy a packet of good seed, sow about the beginning of May—last year I sowed on the 3d of May—in wide-mouthed pots ; for it is better to have a good body of soil under the seed, instead of the reduced quantity contained in seed-pans. For compost I use one half rotten turf, one half sharp sand. Use clean pots ; fill nearly half full of drainage, then add the soil ; fill to the top, press moderately firm, and then sow the seed thinly and evenly ; cover very thinly with fine soil, water with a fine rose, or by drawing the hand across a wet brush, cover with a pane of glass. Then I put them in the forcing-pit ; water when the surface gets dry ; remove the glass as soon as the seedlings appear ; when they have two rough leaves, prick them out an inch apart in a seed-pan, using the

same soil as before, adding a little soot and cow-dung mixed well together. They are now put in a warm frame for a month, by which time they will be ready for potting singly in 5-inch pots. I have tried larger and smaller sizes, but they do best in the 5-inch the first year; they may have a larger the second. For soil for potting I use one-fourth rotten turf, one-fourth horse-droppings, fresh from the stable (it being free from worms and their eggs), and one-half sharp sand. The Primulas delight in open soil, in which their roots can run freely. The pots should be clean, and the drainage also. Fill the pot one-fourth with drainage, then add the soil, keeping the plants well up in the pots. After watering well to settle the roots, remove them to the greenhouse, as near the glass as possible: give plenty of air; water them as they require it while growing. As winter approaches be more careful in watering; water round the edge of the pots. On no account let water fall on the crowns, or they will damp off before you are aware. By the beginning of September they will begin to show flower; pick off the first blooms as they appear. After this they will send up immense trusses of bloom, some three, four, and five at a time; they should have plenty of room for their fine foliage. The blooms of several of mine were as large as a crown-piece; indeed, when the crown-piece was laid on, the fimbriated edge stood out like a frill all round. They are still blooming, and as brisk as ever. The fern-leaved sorts are interesting whether in bloom or not. I turned some of the plants out of the pot to see what the roots were like. The ball was white with fibre, putting me in mind of white silk-thread. As the soil gets exhausted, they will be the better of a little guano-water. As soon as they are done blooming, about May, shake the old soil from the roots, and re-pot in the above-mentioned soil. My little greenhouse has been gay with Primulas, Camellias, Bulbs, &c. &c., all winter. My Cinerarias, being late, will come in about the time the Primulas are declining. They were sown the same day as the Primulas. The above treatment suits the Primula well. I will never want it in the greenhouse.

H. T. C.

[We gladly give these simple but sound remarks of an amateur, and hope some of our numerous amateur friends will favour us at times with their experiences, which are sure to be useful to others similarly engaged and situated.—Ed.]



CELERY CULTURE IN POTS.

IN your Magazine for April, "Under-Gardener" offers "to lay down a rule" for amateurs to be successful in growing Celery in pots. Would he kindly let me have it, either by letter or in the May number of the Magazine, as I should like to try it?—E.G.V.

It is somewhat difficult to lay down any rule in regard to the cultivation of any plant, when that rule has never been proved. Nevertheless, knowing, as we do, the nature of Celery, and the routine hitherto followed in its successful (as far as success was possible) cultivation, we may presume to be able to lay down a rule which, if followed, will certainly secure success.

I need not waste time in directing how the seed should be sown and the young plants treated, as by the time this appears in print most people will have their plants pricked out. However, I may say here, what should be borne in mind all through, never on any account allow Celery plants to receive a check through drought. It is a ditch plant, and any amount of wholesome (as opposed to stagnant) water will not injure Celery while in a growing state. The want of it will ruin the plants and the prospect of a crop.

Bearing this in mind, I would recommend that, when your plants are fit for transplanting in the trenches, select some fine plants with nice balls, and having—say 6 or 8 inch pots well drained with crocks, and a nice heap of soil, composed of sound loam with a liberal mixture of well-rotted stableyard manure, and a good dash of sharp sand—ready, then pot your plants moderately firm, giving a hearty watering to settle the earth among the roots. Now stand your plants where convenience may dictate, preferring, however, a shady place, so that the sun's rays may not parch the soil and injure the roots in the pots. Give, once or twice a-week, weak doses of liquid manure after the pots have become full of roots, so that they may be kept growing vigorously. Now we all know that the stalks produced in summer are not those which are fit for use. The nice, sweet, crisp stalks are produced *inside* the summer growths after the earthing-up process takes place. To imitate this earthing-up, take strands of bast and tie the outer stalks, not too tightly, and any time in the month of October remove them to any *dark* shed, cellar, lumber-room, or any other convenient place, where they will throw up their fine blanched stalks.

October may be considered late for the blanching process to commence; but it should be borne in mind that they will grow later in the season than those exposed to cold rains, &c., which will prove another benefit to the amateur who may not have facilities for forwarding his plants in early spring, and who in consequence loses half the season.

I have not gone into the subject as I might have done, but I believe that the hints I have thrown out will be quite sufficient to guide any one who may be willing to give the system a fair trial, and as every person has different ways of doing the same thing, so every one can adopt the plan most suited to his circumstances.—UNDER GARDENER.



THE MANCHESTER INTERNATIONAL EXHIBITION.

INTERNATIONAL EXHIBITION OF FRUITS, VEGETABLES, AND FLOWERS, IN CONNECTION WITH THE MANCHESTER BOTANICAL SOCIETY, September 3d, 4th, 5th, and 6th.—We have before us the schedule of prizes which are offered on this occasion by this enterprising and successful society, and certainly they are on a scale of liberality which, so far as we are aware, has never been approached at any previous international exhibition. And if anything in the shape of liberal prizes can be expected to bring out the very highest examples of horticultural skill, they may be looked for at Manchester in September. The schedule is, from beginning to end, most liberal. Taking the following as examples of the prizes offered, it will be seen that we are not exaggerating:

For 20 kinds of fruits, including Pines, Grapes, &c., there are three prizes of £30, £20, and £12; for 15 kinds (open) £20, £15, and £10 are offered; for 10 varieties of Grapes, £15, £10, and £6; for the largest and most meritorious collection of vegetables, £12, £8, and £5; for 15 varieties, £10, £6, and £4. Turning to the prizes for plants, we have £20, £12, and £8 offered for 12 plants. Cut-flowers, bouquets, and objects of ornament, are to be rewarded with equal liberality. Implements and designs, to be rewarded with medals, are comprehensively enumerated. In all there are 155 classes, not including a good many rewards offered for bee-culture, honey, and hives, &c. This exhibition, we anticipate, will be THE great horticultural fete of 1873, and we wish it all success. Mr Bruce Finlay, the curator of the Manchester Botanical Gardens, we need scarcely say, is guarantee for the good management of all connected with the exhibition.

I HAVE received a schedule of the "rules," &c., of the International Exhibition to be held at Manchester in September next, and am much surprised to find that the executive committee have virtually debarred Scotch and Irish competitors from being present. This will be apparent by referring to the last clause of rule 9, where it says, "All articles must be staged before eight o'clock in the evening of the 2d September, and on no consideration removed until six o'clock of the evening of the 6th."

Now, be it observed that the 6th of September falls on a *Saturday*. So how are exhibitors from a distance to get their articles arranged and packed in time to get away that evening after six o'clock?

It may be the intention of the committee to provide special trains for those who come from north of the Tweed; but I have no faith in this, however good their intentions.

In many instances an exhibitor from Scotland will have to leave not later than Monday the 1st; and by being precluded from removing his articles until six o'clock on Saturday evening, he is practically compelled to remain until Monday the 8th; and the committee, more especially if composed of practical men, ought to know that gardeners cannot, as a rule, be so long absent from their duties. Such a clause as the one I have referred to is indeed tantamount to preclude, as I have already said, both Scotch and Irish competitors, and I believe many English ones also, as it tells more against them than it will against the foreign competitors, as they are generally represented by their respective agents in this country.

I would therefore beg to suggest that exhibitors from a distance be allowed to pack up sufficiently early in the afternoon to admit of their reaching home, if possible, the same evening; and this I am sure could be done without prejudice to the interest either of the public or the show. It was done at the show held at Glasgow last year; and no one, so far as I am aware, took undue advantage of the privilege.

I trust that this reasonable suggestion will receive at the hands of the committee fair consideration; also, that they will be able to give effect to it; for unless something of the kind be adopted, parties from a distance cannot be expected to attend: consequently the exhibition will be deprived of its international character, and will be nothing else than a purely local show.—I am,
S. W.

[We are certain this is not what is intended by the Manchester authorities, though it may be very inconvenient; and we believe the difficulty will be met, as far as it can be.—ED.]

THE VEITCH MEMORIAL PRIZE.

IN reference to the Veitch Memorial Prizes, we are enabled to state that, with the consent of the Council of the Royal Horticultural Society, the Trustees will distribute the following prizes at the forthcoming show of the Society at Bath, in June next:—

A. For the most meritorious dish of Black Grapes, exhibited as above.—The Veitch Memorial Medal, and a prize of £5.

B. For the most meritorious dish of White Grapes (Muscats), exhibited as above.—The Veitch Memorial Medal, and a prize of £5.

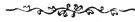
C. For the most meritorious Dish of White Grapes (not Muscats), exhibited as above.—The Veitch Memorial Medal, and a prize of £5.

D. For the most meritorious Specimen Orchid, in flower, exhibited as above.—The Veitch Memorial Medal, and a prize of £5.

E. For the most meritorious Specimen Stove Plant, in flower, exhibited as above.—The Veitch Memorial Medal, and a prize of £5.

F. For the most meritorious Specimen Greenhouse Plant, in flower, exhibited as above.—The Veitch Memorial Medal, and a prize of £5.

The subjects for the foregoing prizes are to be selected from amongst the objects exhibited at the above-named show, in accordance with the Royal Horticultural Society's Prize Schedule, by *bonâ fide* gardeners of Great Britain or Ireland. A notification of entry on the part of those who desire to compete is to be sent, not later than June 14, to the Trustees, under cover to Mr Moore, Botanic Garden, Chelsea, London, S.W. ; and it must be stated in which of the classes in the Society's or the Local Special Schedule of Prizes the exhibits will be found. The awards will be made for high-class cultivation, and the decisions of the judges will be final.



REVIEWS.

HANDBOOK OF HARDY TREES, SHRUBS, AND HERBACEOUS PLANTS — Containing descriptions, native countries, &c., of a selection of the best species in cultivation, with cultural details, &c., based on the French work of Messrs Decaisne & Naudin, including the original woodcuts by Rivereux and Leblanc. By W. B. Helmsley, formerly assistant at the Herbarium of the Royal Gardens, Kew. Longmans, Green, & Co.

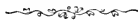
A work extending to 645 pages, 554 of which is devoted to the first part of its contents—viz., a botanical description, &c., of hardy trees, shrubs, and herbaceous plants, arranged according to the natural system, and the remainder of the volume is devoted to practical gardening. The latter part of the work we need scarcely say is very compendious, and is a branch for which the author's training has evidently not fitted him so thoroughly as for the work undertaken in the first part of the volume. It will be easily conceived, from the title of the volume, that the author has had a very extensive range from which to make a selection most suitable for popular culture; and although the volume is a large one, we do not think that he has erred on the side of being too comprehensive; in fact we consider the selection is not so extensive in its range as is desirable. Each genera and species is briefly but comprehensively described botanically, and the origin of the generic name is in most cases explained—an interesting

feature in such a work. It is illustrated by hundreds of well-executed woodcuts. Altogether this is a work that we commend to all who are desirous of becoming acquainted with a selection of hardy plants. We hope the author will carry out his intention of doing for tender plants what he has here done so well for hardy ones.

CHOICE STOVE AND GREENHOUSE FLOWERING PLANTS—Comprising descriptions of upwards of eleven hundred species and varieties, with instructions for their cultivation, &c. By Benjamin Samuel Williams. Second edition, enlarged, illustrated, and revised. Published by the Author.

This is a great improvement on the first edition of this work, excellent as that was. Mr Williams's name is guarantee sufficient for the judicious selection of plants and their culture, for he is well known as one of the best plantsmen of the day. Everything connected with the successful culture of these plants is here plainly and minutely detailed. Plant-houses, cisterns, glazing, heating, hybridising, potting, propagating, soils, &c., are ably handled, and we heartily commend the work as an excellent companion to the author's excellent Orchid book, both of which books should be possessed by all who are interested in hot-house plants.

We have received :—A General System of Botany, Descriptive and Analytical. By Emm Le Maout & J. Decaisne. With 5500 engravings. Translated from the original by Mrs Hooker, and arranged by J. D. Hooker, C.B., &c., &c. A splendid volume, to which we will refer on another occasion.



Calendar.

KITCHEN-GARDEN.

THIS has been one of the coldest and dullest springs, on the whole, which we have known for years, and vegetation has made very slow progress generally, except seeds, which I never remember ever seeing grow with greater vigour. Our earliest positions for early vegetables to succeed those in frames are on ridges thrown up sharply to the sun; borders under high walls have not been so favourable. A number of old lights laid flat on the surface have brought the seedlings on rapidly, gaining a fortnight on those by their side which remain uncovered. They are raised on bricks as the plants advance in size. Plant preservers have also done good service. They can be carried through doorways and placed in any position without trouble; they bring on Lettuce, Cauliflower, Carrots, Radishes, &c., very quickly. They are very useful for early Potatoes and French Beans, both being easily destroyed by frost. Many early crops will require frequent attention, as they may have been destroyed by fly, slugs,

or birds. Dustings of lime or soot may do much to keep depredators in check. Sowing seeds with red lead dusted over them does much to keep birds off them. Crops of every sort sown early may require thinning soon. If seed has been sown very thickly, thinnings should have attention as soon as the seedlings can be handled; thin them out piecemeal so as to prevent the young plants from being drawn up weakly. This applies to Carrots, Turnips, Onions, Parsnips, Beet, and Parsley; the thinnings of these can be planted out for a crop. Let all crops be thinned so that sun and air can get freely among the leaves, and to the soil. On strong soils more thinning is required. Chicory and broad-leaved Dandelion, if not already sown, should now have attention. Sow full crops of Peas (two or three times in the month), Broad Beans, Scarlet-runners, French Beans, and Beet. Keep up successions of salads by sowing in small quantities at short periods. Radishes, Spinach, and similar crops may be sown between

other crops: ground will thus be saved. Endive of sorts may be sown about the end of month. Plant out Cabbage, Brussels-Sprouts, Kale, Savoys, Cauliflower, early Broccoli, or any other crops, before they become drawn in the beds. When time can be spared to prick out seedling plants of the Brassica tribe, preparatory to planting them out, they are greatly improved by the operation, except Cabbage, which may be planted, so that every other plant can be cut out for use. All the Brassica kinds may be planted from 2 to 2½ feet apart. Three feet on some soils is not too much for Broccolis. Celery to be planted out soon should be grown steadily without any check, either from want of water, cold draughts, or continued cold drenching. Plenty of well-rotted manure is absolutely necessary to grow highly-flavoured Celery. Cardoons, if not required very early, may be sown in the trenches. Thin herbs in time; sow Chervil. Leeks may now be thinned and planted out. They require abundance of strong manure to grow them in. If Potatoes are through the soil, they may have earth drawn over the tops as protection from frost. New

Zealand Spinach may be planted out under hand-lights or other protection. Capsicums should be grown freely with plenty of air on, looking out for green-fly; pot them on as they may require it. Tomatoes to be planted on walls or fences may be hardened gradually. Those forcing under glass and swelling their fruit should not be overcropped. If they can be trained by one stem without being stopped, they will produce finer fruit and more of it. They then should have all laterals rubbed off, leaving the flowers; but want of space causes topping to be practised. Ridge Cucumbers, Ghirkins, and Vegetable Marrows should now be well forward, and hardened gradually to fit them for being turned out at end of month. Ridges may be made for them, warm manure and leaves placed in, and the soil placed over the fermenting material. The plants can then be put in their positions, 4 to 6 feet apart, under hand-lights. French Beans in frames should have plenty of air; sprinkle them over head, and shut up early, harvesting sun-heat. Keep them rather dry when they are in flower. M. T.

FORCING DEPARTMENT.

Pines.—Queens that were started early, and that were past flowering in February, will now be progressing rapidly towards maturity. Keep them steadily moist at the root, and give them weak guano-water at every watering instead of stronger doses less frequently. Take every advantage of bright days, and shut them up early, causing the thermometer to range from 90° to 95° for a time; at the same time loading the air with moisture, and dewing the plants over through a fine rosed syringe. Start the fires in time to prevent the heat from sinking below 75° at 10 P.M. Those that begin to change colour by the end of the month should be kept drier at the root and have more air. It is a good plan when they cannot be removed to another compartment to class the earliest at one end of the house, so that they can be ripened under more favourable conditions than when standing among later ones. Those plants which are now just showing that they have started into fruit, require to be carefully noticed, so that they do not at any time, especially during bright weather, get too dry at the root. If

dry when it is noticed that they have started, give them a thorough watering, and afterwards just keep the soil steadily moist, with a moist atmosphere, and frequent dewings overhead, except when in bloom. Succession stock that were shifted into their fruiting-pots in March will now be growing vigorously. Keep up the temperature for these, with as little fire-heat as possible, by husbanding sun-heat in the afternoons and evenings. The night temperature on mild evenings may range to 75°, falling to 70° by morning. When the weather is cold and dull 5° less will be high enough. Damp down the fires when the mornings show signs of a bright day, and start them in the afternoon just in time to prevent the night temperature from falling below what has been directed. Sprinkle the plants lightly overhead three or four times weekly in bright weather at shutting-up time, and keep the soil just moist, but not wet. Give air in the morning by degrees, instead of first allowing the temperature to rise very high and then putting on full air all at once. Reduce it likewise by degrees after 3 P.M. If these are at all crowded give them

more room at once, for when Pines are huddled thickly together it is impossible to make fine plants of them. Winter-fruited varieties that were shifted into their fruiting pots in autumn, and that have made a spring growth well filling their pots, should now be kept cooler and slightly drier, with the view of resting them for six weeks, and then starting them for late autumn fruit. Smooth Cayennes and Charlotte Rothschilds, that had well filled their pots with roots in autumn, can now be started, and they will succeed Queens that started along with them as the former named sorts take longer to come to maturity.

Vines.—Keep the atmosphere in the early house, when the Grapes are quite ripe, dry and cool. If our previous directions regarding mulching and watering the border before they were quite ripe, have been carried out, there will not be much fear of them becoming too dry at the root before the fruit is all used. Should red-spider present itself, sponge the leaves wherever and whenever it is noticed. If clean soft-water is to be had, the Vines may be syringed on two successive afternoons; it will not destroy the bloom of the Grapes, and it is much preferable to allowing red-spider to get a footing. When the fruit is all cut from pot-Vines, remove the Vines, and thoroughly wash and cleanse the house, and then the young Vines intended for fruiting in pots next year can be put in it. They will now be ready for their fruiting-pots, and should be pushed on with a high temperature. We recommend a rather strong turfy loam, with bone-meal and a little pounded charcoal for these. Shut up Vineries where Grapes are swelling off early in the afternoon, running the heat up to 85° for a time with sun; and start fires in time to prevent Muscats and other heat-loving sorts from falling below 70°, and Hamburgs below 65°, as minimum night-temperatures. Look over the Vines two or three times weekly, and rub or pinch off all incipient superfluous lateral growths. See that the bunches are sufficiently thinned before the berries become too compact for thinning. Whenever they begin to colour, gradually withdraw atmospheric moisture, and increase the amount of air by day and night. Stop and tie down the growths in later houses, stopping them two joints beyond the bunch.

Thin the berries immediately they are set in the case of free stoning sorts. Avoid heavy cropping, especially in the case of young Vines; and when the Grapes are intended to hang through the winter, thin the berries well, so that air can circulate about them. Young Vines planted in March and April will now be growing rapidly: allow these to make lateral growth and foliage sufficient to cover the roof, without being crowded. Pay particular attention to inside borders, and see that in no case they ever become dry and crack; give occasional thorough soakings, in preference to more frequent but less efficient waterings.

Peaches and Nectarines.—Give more air and less moisture in the early house as soon as the first signs of ripening are observed. If any of the fruit are partially shaded by leaves, push the latter aside, so that the sun may reach as much of each fruit as possible, so that they may be well coloured and flavoured. Where the crop is past the stoning stage the night heat may range to 65°. Shut them up early on fine afternoons, running the heat up to 80° for a time, at the same time well syringing the trees. When the inside borders require water, in the case of old trees bearing heavily, give a thorough soaking of manure-water, and if not already attended to, mulch the border with rotten manure. Tie in the wood in later houses, and in doing so avoid crowding it. Thin the fruit by degrees, leaving the final thinning till they are stoned. If green-fly appears, fumigate with tobacco; and to keep spider from making its appearance, as well as for the general welfare of the trees, syringe freely on every fine afternoon at shutting-up time. Allow young trees that are inclined to grow grossly to bear heavily, and stop or remove any shoots that may be growing much more vigorously than the others.

Figs.—Where the first crop is ripening keep a circulation of warm air about them, and let them be kept as dry as is consistent with the well-doing and safety of the second crop. Do not gather the fruit until it opens at the crown and the juice is oozing from it, unless, indeed, they have to be packed and sent to a distance, when they require to be gathered before getting too soft. Where the second crop has formed thickly, partially thin them

in time, and as soon as the first crop is all gathered give them liberal waterings at the root, and syringe the trees freely every fine day. Established trees with their roots in either pots or circumscribed borders require a quantity of water, and to be well fed with manure. Young trees that are not yet bearing freely should be less liberally treated, or they will grow too grossly.

Melons.—Where the fruit are advanced towards full size give less water or they will be apt to burst. As soon as they show signs of ripening, just give sufficient water to enable the plants to mature the fruit, but no more, and expose the fruit to full sun, and give air more freely on fine days. Impregnate succession crops on fine days whenever the blooms are ready; stop the laterals one joint beyond the fruit. As soon as a full crop is set give the soil a good watering; and if the plants are trained on trellises, mulch the surface of the soil with rotten manure to keep it moist with less frequent waterings. Sow and plant out for succession crops.

Cucumbers.—This is a good time to

plant for summer and autumn supply. Those which have been bearing heavily for a considerable time back, will now be benefited by a top-dressing of equal parts loam and horse-droppings. Where spring-planted crops are now equal to the demand, the former may be pulled out and their place occupied with Melons, where such is necessary. See that those now bearing heavily are well supplied with water. Syringe them at shutting-up time, and if thrip appears fumigate on two successive nights with tobacco.

Strawberries in Pots.—When it is necessary to retard ripening crops, place them in cold pits, and give plenty of air night and day. Red-spider is frequently very troublesome after the beginning of this month, and the plants should be syringed to prevent it until the fruit begin to colour. The remainder of the stock can now be brought forward in cold pits and frames to keep up the supply till the outdoor crops ripen. All plants from which the fruit is gathered harden off previous to being planted out.

Notices to Correspondents.

MANOR.—Cocoa-nut-fibre is not injurious, but the reverse. The rougher portions of it would be a substitute for drainage, but not a lasting one. It is advisable to subject soils in which are the larvæ or eggs of insects, such as wire-worm, to a high temperature before using them; and in the case of retentive clays, a portion may be burned or charred with advantage. Equal proportions of turfy loam and leaf-mould, with a little sand, will grow the Mimosa.

T. P.—Mr Allsebrook's address is: Southview Gardens, Sparrow Lane, Sheffield.

A CONSTANT READER.—Your Geraniums are in precisely that condition in which we have seen them when in badly drained pots, and when over-watered in compact or soddened soil. See to the drainage, and if the soil is soured, let them become dry, shake all the soil from them, and repot them in fibrous loam, with a third part of leaf-mould or well-rotted manure, and you will find the spot leave them, all other things being equal.

A. M.—Your letter is too personal, to say the least of it; therefore we must reject it.

P. M'D.—We will have a paper or two on Azaleas soon that will help to meet your wants. Meantime you cannot do better than you propose.

T. F.—Any respectable firm will supply you. We never recommend nurserymen.

J. F.—The large purple bloom is very deficient in fulness of petal and symmetry. The crimson is very large, also colour effective, but wanting in symmetry. The same applies to the bicolour one. There are much finer blooms in cultivation.

THE GARDENER.

JUNE 1873.



COWAN'S PATENT COMPENSATING SYSTEM OF HEATING.



ANY system of heating hothouses which will at the present time mitigate or lessen the expenses connected therewith, ought to, and no doubt will, meet with every consideration while coal is so enormously enhanced in price. We have much pleasure in directing particular attention to a system combining the production of lime and the heating of some considerable extent of forcing-houses, which has for some time been in operation in the gardens at Drumore in Ireland, and which is the invention of Mr Cowan, the intelligent gardener there. This new system consists of a lime-kiln and an ordinary hot-water boiler combined, by which the usually wasted heat of the former is efficiently applied to the latter, of which fig. 12, kindly lent to us by Mr Cowan, will at once give our readers a clear idea. It represents a transverse and vertical section: *a* is the chamber of the kiln for lime-burning; *b* is a lining of fire-brick; *c* a backing of sand to conserve the heat; and *f* is the boiler placed over the mouth of the kiln to receive the heat generally wasted in the process of lime-making. The outside of the building may of course be stone or brick as most convenient. The two at work at Drumore are built with stone and faced with cement. They are both inside the garden, and look quite as neat as any ordinary hot-water apparatus can possibly be. Mr Cowan of course admits that it would be more convenient to have them outside the gardens, were that possible; but there need not be anything unsightly connected with them in any position whatever. The patent does not

bind Mr Cowan to the adoption of any form of boiler or any particular shape of kiln, the principle of the patent being the combination of the apparatus for heating horticultural or other buildings and making lime at one and the same time. Part of the kiln itself, or the whole of it, may be made of iron, and so turned into a large boiler when

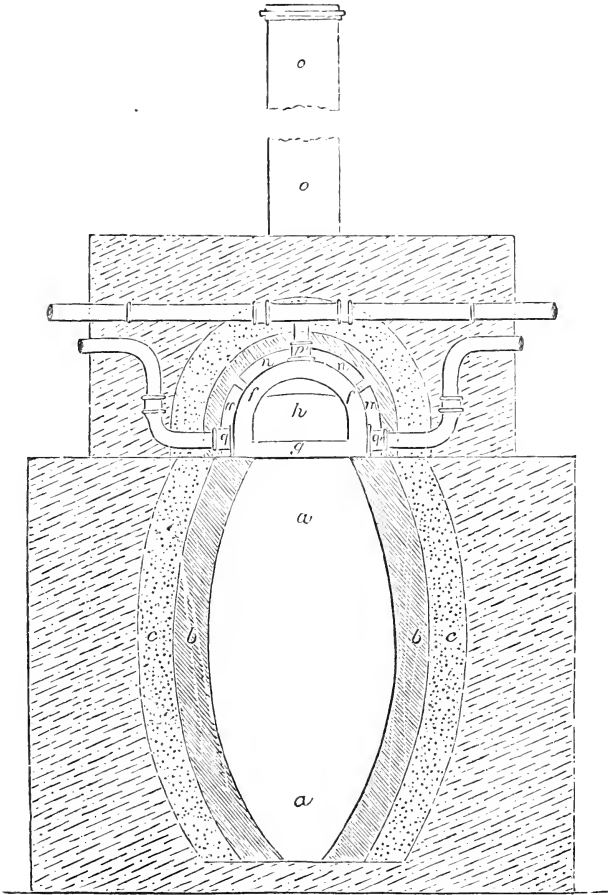


FIG. 12.

circumstances would warrant such an arrangement and any one can easily conceive what an immense heating power could thus be put in force. The working of this combination is said to be very simple, the chief point being the proper quantities of either limestone or chalk, and fuel with which to charge the kiln. The kiln is filled quite full before it is lighted. When once

lighted it keeps burning until purposely let out. The cold lime is drawn out at the lower part of the kiln once or twice daily, and the space left at the top filled with alternate layers of fuel and limestone. Mr Cowan finds that once during twenty-four hours is frequent enough for this operation, no further attention being required in the way of firing until the time comes for the second operation; and the time necessary to do the whole work connected with the kiln is just two hours of one man daily, including the breaking of the limestone, removing the lime, filling and putting everything right for the day. The fuel Mr Cowan recommends is anthracite coal or coke, from which there is next to no smoke; but of course any fuel which will burn lime in ordinary kilns will do for these. One of the apparatus at Drumore has been at work for more than seven months, and the other over three months. The first heats a vinery, a propagating house, and a plant-house. The other heats a range of vineries 200 feet long by 16 feet, and has 1000 feet of 4-inch pipe attached to the boiler; and both are ordinary saddle boilers, not by any means large or of the best stamp of that class of boilers. Mr Cowan has arranged for the manufacture of an improved boiler to take the place of such as he has made a beginning with—a model of which we have seen, and which must be powerful and conservative of heat when placed over the lime-kiln. But where the amount of heat required is not very great, the ordinary saddle does perfectly well, and is to be recommended on account of its cheapness. When the kiln is required to be kept going and heat not required in the houses, if such should ever be a necessity, Mr Cowan makes provision for this by fixing a supply cistern very much larger than an ordinary one near the boiler, and connecting it with both the flow and return pipes, and by turning the valves the heat can be turned from the houses to this cistern without any danger to the apparatus.

With regard to the saving or compensating capabilities of the system, it is found that as much good lime is produced as pays the whole cost of fuel at Drumore, where coal costs 25s. per ton, and it just requires the two hours' labour of one man per day for the heating done. Of course the larger the apparatus the better it would pay; and in districts where coal is cheaper and lime dearer, it would tell much more in favour of the system. Mr Cowan just gets 5d per bushel for the lime.

These remarks, we hope, will give some idea of the system Mr Cowan has found to answer his purpose completely, where economy is of first-rate importance; and surely it is well worthy a trial at the hands of those who can procure either chalk or limestone. Those who have seen the system in active operation at Drumore speak in the highest terms of its efficiency.

THE CULTURE OF PITCHER - PLANTS.

(CEPHALOTUS, DARLINGTONIA, SARRACENIA.)

WE have here a very interesting group of dwarf Pitcher-plants, most of the species being natives of temperate habitats, and consequently all the more valuable from the fact that they are easily cultivated to perfection in a moderate temperature. The pretty little *Cephalotus* is from Australia, while the *Sarracenia*s, and their congener, *Darlingtonia*, are American. *Sarracenia*s have been in cultivation for nearly a century; and in vol. vi. of 'Andrews' Botany,' plate 381, will be found an excellent figure of *S. flava*, one of the most valuable species at present existing in our collections. The above-mentioned work was published about 1797, at which period four species existed in London gardens, though extremely rare. Andrews says, "The side-saddle flowers are rather difficult of cultivation, succeeding best when treated as greenhouse bog plants and plentifully supplied with water." Although these charming plants have been inmates of our gardens for so long a period they are still uncommon in collections, which is somewhat surprising when we consider the ease and facility with which they can be grown. The whole group will luxuriate in a fresh open compost composed of lumps of fibrous peat, living sphagnum moss, and coarse river-sand, taking the precaution to have the pot or pan thoroughly well drained. After they are potted, add a layer of living moss over the compost, and give them an abundant supply of moisture both at their roots and also in the atmosphere. Sphagnum moss, when of good quality, is simply invaluable to the culturist who wishes to succeed either with Orchids or Pitcher-plants. Bear in mind the important fact that the whole of this group are essentially bog plants and must be treated accordingly, taking care they never suffer from lack of moisture, while the moss should be induced to grow as freely as if in its native marshes. A moderate temperature suits these plants admirably, but the atmosphere must be kept both close and humid, aridity being exceedingly injurious to them; indeed few plants suffer more from excessive transpiration. It is a good plan to set the base of the pot or pan in another pan filled with water and partially full of crocks, and in the case of small or sickly plants, they may be advantageously covered with a bell-glass, so as to prevent any loss from excessive evaporation. *Sarracenia*s and the *Darlingtonia* may be grown to perfection in a fern-case along with *Todeas*, or *Filmy Ferns*, the humidity and subdued light being agreeable to both; or they may be grown along with *Odontoglossums*, *Disas*, and *Masdevallias* in the "cool" Orchid-house. They would also be very interesting objects to plant out in a temperate fernery arranged in the natural style. A plant of *Sarracenia purpurea* grows planted

outside in the "rock-garden" of Messrs James Backhouse and Sons, at York. This plant had a reputation as being efficacious in cases of smallpox, but the idea is now nearly exploded. There are about half-a-dozen species of *Sarracenia*, all of them being found in the swamps or marshes of N. America. They vary in height from six inches to two feet, and bear very small rounded leaves at the apex of swollen trumpet-shaped petioles. These swollen petioles are very efficient fly-traps, for which purpose they are not unfrequently used in the localities where they are found. The flowers of these curious plants are borne singly on scapes longer than the leaves; some species having pale greenish yellow flowers, while in others they are of a dull purple colour. The flowers themselves are peculiar, having a very large five-lobed disc, beneath which the stigmas are situated. In practice it will be found best to remove the flowers as they appear—that is, if specimen plants are required—thus reserving the vigour of the plants for the production of foliage, which is their chief attraction. Well-grown specimens of *Sarracenias* are very effective for exhibition purposes, as all can testify who have seen the *S. flava* of Mr Thomas Baines, or the noble plants of *S. Drummondii* at Chatsworth.

The Californian Pitcher-plant, *Darlingtonia californica*, is nearly related to the *Sarracenias*, but is if anything more rare and beautiful. It bears swollen pitchers about a foot high, which curve over at the top, forming a hood; and the lid or leaf, instead of being rounded and entire as in *Sarracenia*, is divided like a fish's tail. The pitchers, like those of *Sarracenia* and *Nepenthes*, secrete a slightly glutinous fluid, and old pitchers are generally found partly full of decomposed insects.

Cephalotus follicularis, or the Australian Pitcher-plant, is the smallest in the group, but highly interesting, bearing a profusion of its green, purple-spotted pitchers, which are borne on separate stalks—not at the apex of the leaf-like petiole as in *Nepenthes*. The leaves of this curious little plant are about 3 inches long, and of a dark green colour, and are quite distinct from the urn-shaped appendages amongst which they are interspersed. This plant grows well in the above-mentioned compost, and enjoys the protection of a bell-glass. It is a plant of doubtful affinity, and at present enjoys the distinction of having a whole natural order to itself. I saw a fine specimen of this plant some time ago in the collection of John Waterhouse, Esq., Well Head, near Halifax, Yorkshire. It was in excellent health, and bore numerous large and richly-coloured pitchers.

The species of *Sarracenia* at present in cultivation are all of them very beautiful and interesting. There are two distinct varieties of *S. Drummondii*, and at least three of its congener *S. flava*.

S. Drummondii.—This is a fine robust species, growing in spring and autumn like its allies, but making by far the finest growth at the latter period. It varies in height from a foot or 16 inches to 2 feet, and forms a noble specimen when well grown. Its pitchers are of a greenish colour beautifully mottled with purple, or white near their trumpet-shaped mouths. This plant and its variety *S. Drummondii alba* succeed best when potted in the later summer months just before their autumn growth commences.

S. flava.—This, like the last, is a vigorous species, bearing pitchers very similar in shape and size to the last, but of a pale yellowish green colour. It makes a fine specimen when thoroughly established, though like its congeners it speedily goes wrong unless the compost is sweet and open.

S. rubra.—One of the rarest and most beautiful of all the species in this genus. Its pitchers are green, finely veined with crimson, and the flowers are perfumed very delicately and not unlike violets.

S. purpurea.—This is one of the commonest species, bearing great winged pitchers about 9 inches or a foot long. The pitchers are borne in great profusion, and are very broad in proportion to their length. They are of a dark green colour, veined with reddish purple. This plant is often known as the "Huntsman's cup," and being easily grown, is well adapted for general culture.

S. psittacina.—This is a remarkably distinct species: the upper part of the pitchers curve over the orifice or mouth, something after the style of the *Darlingtonia*, but from which it is readily known, as it is destitute of the drooping, swallow-tail appendage, irrespective of a marked difference in colour and size. This fine species is rare in cultivation, and bears pitchers about 6 to 9 inches long, which radiate from the centre, spreading out horizontally—not growing erect like the other species. This plant grows well at Chatsworth along with its congeners. They are placed close to the glass at one end of the "cool" Orchid-house, and at few places have we seen them thrive so well.

A mean winter temperature of 45° is amply sufficient for these plants; but when growing, a rise of 20 or 30 degrees during the day-time will do them no injury. They must be protected from bright sunshine and copiously supplied with moisture, never allowing the compost to become thoroughly dry, not even when they are resting. All the species mentioned in this paper are readily propagated by division, and will not be found more difficult to manage than choice Ferns or Stove plants.

F. W. BURBRIDGE.

FORCING THE ROSE.

Of all forced flowers in use for the spring decoration of the conservatory there is perhaps none more desirable than the Rose ; nothing gives so great satisfaction when a good and successful result is obtained. It is showy, its fragrance unsurpassed, the foliage noble when at its best. The Rose seems to grow to be cut, for a long stalk may be taken with the flower, and the plant is not injured, and a succession of flowers are maintained for a long time on the same plant. The Rose being the queen of flowers, it is peculiarly the gentlemen's as well as the ladies' flower, and certain bachelors of our acquaintance will tolerate no other flowers about their grounds. But it is about the forcing of the Rose we have to write ; it does not need our prosaic praise.

The early-forced Roses are now nearly over, and are being gradually moved out into the open air in a sheltered place to rest and harden. This appears to us to be really the starting-point from whence to prepare the plants for another year's forcing ; and we think also that now is a good time for those who have not got a stock of plants in pots, and who intend forcing another year, to get the desired quantity together. This may be done by ordering plants established in 6-inch or larger pots from the nursery, or we should prefer plants in smaller pots of our own selection, unless we could depend on our nurseryman doing us justice. If to spare, the desired number of plants might be lifted from the open ground at home and potted, but this plan is not always satisfactory, unless there be a stock of young plants at command, as the roots of old plants are not easily accommodated to pots of handy dimensions ; and cutting away the roots of a Rose in order to fit it to a pot of convenient size is barbarous, and fraught with disaster to the plant ; we therefore prefer beginning with young pot-plants.

Most varieties of the Rose are capable of being forced ; but the Hybrid Perpetuals are much to be preferred as a whole, and it is of them that the great bulk of our stock is composed. A few of the old Cabbage and common Moss Roses are desirable on account of their fragrance and delicate colours—besides, the Moss makes the finest button-hole Rose ; they are both also very prolific bloomers. A few also of the summer-blooming Roses are indispensable, such as Coup d'Hébé, Charles Lawson, Paul Ricaut, Maiden's Blush, and a few others. But it is among the Hybrid Perpetuals that the grandest Roses are to be found and the greatest variety selected. Baroness Rothschild is a magnificent light-coloured Rose for forcing, and a strong grower ; Duke of Edinburgh, a dark Rose, also fine ; La France, a superb Rose ; Miss Poole, Jules Chretien ; and of older Roses, Jules Margottin is very prolific ; Sénateur Vaisse and General Jacqueminot are two old Roses of fine scent and colour ; Souvenir de la Malmaison is a sure and dis-

tinct Rose : but selection is scarcely possible ; they are nearly all equally suitable—at least we find them so. Many of the Tea-scented Roses are also first-rate for forcing, cutting them when just about to open. It is needless to name varieties, as the whole of them are suitable for pot-culture. If plants are received from the nursery they must be examined at the roots to see if drainage is all right and the soil in a healthy condition. Any plants with the pots full of roots should be shifted at once ; those not demanding shifting should remain until some growth has been made, standing the plants in a cold pit for a time with plenty of ventilation.

By the first week in June, when the sun is getting hot and powerful, they should be plunged in the full blaze of his rays out of doors. This is the time when we repot all our stock of pot-Roses ; till the first week in June they have been resting after the flowering period, attention being paid to them in watering and not overcrowding them in some sheltered place out of doors. Those in small pots are shifted on if the pots be full of roots and the soil healthy ; others may require partial shaking out and repotting in the same sized pots ; none of them are in larger than 11-inch pots, which is large enough for early-forced Roses, and fine large plants can be grown in pots of that size. We do not cut or prune Hybrid Perpetuals at this stage, believing that they should have all the foliage left to ripen the wood and enable them to make roots ; much fresh growth after this is not desirable on Roses to be forced early. We, however, cut out any old exhausted wood from the Tea-scented Roses.

The Rose in the open ground thrives best in strong loam, whose basis is clay ; for potting, however, a lighter open soil is to be preferred : a light, yellow loam of a sandy texture is what we use, well enriched with rotten farmyard manure. Light manures, such as leaf-mould, or old mushroom-bed dung, are not of much use for Roses—they like more substantial fare. The soil should be chopped up rough, and a sprinkling of crushed bones will much improve it, and a few over the crocks will serve the double purpose of drainage and manure, which the roots soon find out. Pot firm, and drain well. When firmly potted the soil is not so liable to become waterlogged, or the drainage disarranged. Roses want a deal of water in the summer. When all are potted as they require, arrange the plants in rows according to size—the tallest at the back, and giving room to those which require it, without any attention as to the distances being uniform—in a turf pit facing the sun, in a warm sheltered place, and fill in between the pots with sawdust, which keeps the roots equable as to temperature and moisture. The sawdust absorbs the heat of the sun through the day, and pine-wood sawdust is also obnoxious to worms when it is fresh.

Here they will now require very little attention throughout the summer, except watering, and an eye to suckers from the stocks if the Roses are worked plants. Those known to be well rooted should have weak liquid manure at all times when watered. We sometimes top-dress the whole with sheep's or other dung, as it is useful at a rainy time. When the water-pot is not required, the rain washes the manure into the soil. All flower-buds are picked off the plants as they are formed, and sometimes a few plants may require staking, but not often, unless a strong shoot gets top-heavy, catches the wind, and unsettles the whole plant in its pot. About the end of October we remove the whole to the Peach-cases, where there is abundance of air night and day. Here they are allowed to become comparatively dry at the root, when the foliage will soon begin to turn yellow and fall off, a sign of ripeness of the wood. Water now may be withheld entirely. By the middle of December they may be pruned. This we do to the whole at one time. It is not at all necessary to leave those unpruned which are required later. They will start as required, just as Vines in pots will. The difference in flowering is effected by the time the plants are pruned, but by this time they get introduced into heat. The first lot may be selected and started at once; the moist mild temperature of a peach-house just started suits them well. Here they will have the syringe daily, and for a time plenty of light, and a minimum of fire-heat. If a low span-roofed forcing-house can be devoted to them, so much the better; they can be better attended to as regards ventilation, and will have the benefit of all the sunshine possible, better than under Vines or Peach-trees. One good soaking of water will be sufficient for a time; the syringe will keep them moist enough until they have developed some foliage. The chief points to be attended to now will be to husband the sun's heat, to ventilate freely when weather will allow, but avoid draughts, which will injure the tender foliage, and induce insects. The object must be to get strong growth; spindly drawn growth ruins the plants for future use, as well as yielding poor unrecognisable flowers. Fumigate on the least appearance of aphis, and watch for the Rose-grub, which curls up the leaves and eats out the buds. Force slowly with as little fire-heat as possible, the thermometer ranging from 50° to 65°, or 80° with sun-heat.

The plants must be gradually hardened before removing to a cool house, else the buds may turn yellow and drop off. If the conservatory be warm, they will not feel the change, especially if the forcing has not been rapid, and the pots not been plunged in heat. Water with liquid manure as soon as the buds begin to show, and continue until all the flowers are cut, after which the same routine of ripening and resting and potting begins for another year. THE SQUIRE'S GARDENER.

TEMPERATURE OF FORCING-HOUSES.

I RETURN to the subject once again, and with these remarks I close the discussion with "D. J.," on my side at least.

After reading his last paper through, I am struck with its meagreness, seeing it is the production of one who, according to his own account, had the accumulated facts of a lifetime to draw upon, but which seem to have evaporated in an unaccountable manner in the first emergency. It seems I am accused of dark and "unscrupulous insinuations," to use my own words; but which are not my words at all, but "D. J.'s" misquoting as usual. Now "insinuations," as Sam Weller's "respected parient" would say, I take to be the weapons of those who dare not, or hesitate to express their real sentiments frankly. In this sense the term does not apply to me, for I think I may fairly claim to having been exceedingly explicit with "D. J." when accusing him of misquoting my text—or mending it, shall we say?—and not only mine, but also Mr Thompson's, on the assumption that he quoted from his 'Gardener's Assistant,'—and which he has not refuted yet; and as a guarantee of good faith I appended my name to my paper, more especially as it appeared that "D. J." was striving, in a round-about way, to identify "J. S." and the "worthy Mr Simpson of Wortley" with one another. I see that he, for a most paradoxical reason, prefers to remain safe behind his initials. As it appears, however, that "D. J." had to go back to my paper to understand it properly a month after he had answered it, I am willing to credit him with having made a mistake, so far. But he "does surprise" me when he says, with regard to temperature, that he counted from morning till noon, and "holds he is right." This looks exceedingly like begging the question. I took it for granted, of course, that he apprehended me in the sense that I put it. I spoke of the *decline* of the temperature, not of its *rise*, though I am perfectly willing to take this view of the matter, for it just comes to the same thing. Under natural conditions, the rise of temperature is always more sudden than its decline. As a rule, the minimum is reached just before sunrise; after this, the temperature rises rapidly to its maximum. On a Peach or Apricot wall, for instance, these conditions are aggravated (and without any bad results), for the sun blazes forth upon the trees while they are still wet with dew, and will sometimes raise the temperature as much as 30° or 40° in an hour, or little more; so there is no loop-hole here for your correspondent. Next, I am accused of culling extreme instances of temperature from the 'Meteorological Society's Journal,' extending over a number of years; whereas, except in one instance, I quoted only from the spring numbers of 1870 and 1871. But "D. J." may quote from any year he chooses; the result will be the same, especially with regard to mean temperatures. An instance comes to hand. The mean temperature of the month of April at Bordeaux is only a few degrees under that of Catania and Cadiz; but only the other day we learn that the vintage there has been destroyed by frost near the end of April—an unfrequent occurrence, perhaps, but sufficient to show that the temperature must frequently be very low when the Vines are well advanced in growth.

Further on, "D. J." makes me to say that if Vines are not treated to a minimum temperature of 45° or 50°, the end will be "failure, ruin, and death." I must refer your readers to my original December statements, to show how my words have been here manipulated by my opponent, and made to express a meaning that was never intended. But his case is desperate, as he shows by quibbling about my words "up to" the setting period, and "while Muscats are in bloom." In my mind these terms are synonymous; but let me be explicit, and say that I

see no reason for supposing that Vines, Muscats, or others would be injured by being treated to a minimum temperature of 45° before sunrise, any time up till the berries are set. This is my meaning; but let me add, that I gave that figure in my December paper as the lowest to which it might be safe and necessary to descend in severe weather. My object, as I clearly stated at the same time, was to arrest perspiration at night, as far as that was practicable, by dispensing with fire-heat. It never occurred to me that any sensible person could suppose I objected to a temperature of 60° for instance, or more, if the outdoor thermometer stood at that figure, or near it; the object for which I contend would be accomplished all the same. I feel sure that to very few readers of the 'Gardener' it is necessary for me to make this explanation. Lastly, it seems I am preaching one doctrine and practising another—an altogether gratuitous and untenable assumption on "D. J.'s" part, evincing a disposition to misconstrue my meaning at all hazards; and having done this, he, with characteristic modesty, fishes for compliments from employers and others, for having challenged successfully my December statements, as it appears some employers are more apt to believe what they read than what their gardeners tell them. Now, in the April number, I described my own practice with perfect frankness, as I had led no one to suppose, by any words of mine, that I had hitherto deviated far from the beaten track. In December I only suggested lower temperatures, and said, "I meant to make the experiment, and was sanguine of the result." That promise I had not forgotten, and the result would have been published in the 'Gardener,' or perhaps elsewhere, whether this discussion had taken place or not.

The subject of experiment was our Muscat viney. This house is worked in connection with four other houses, is heated with hot-water pipes, and the heat can be turned off by a valve in the next division, so that it is conveniently placed for the experiment. About the end of February the outside border was covered with 18 inches of litter and leaves, and a ridge of leaves only was laid on the inside border. The Vines were started fairly at the beginning of March, up to which time no fire-heat had been applied; but from March 1st till April 8th, the hot water was turned on every day at 6 o'clock A.M., and turned off again between 1 and 2 o'clock P.M. The day temperature ranged from 80° to 85°, the thermometer, as a rule, falling to 45° in the morning—sometimes, but not frequently, falling as low as 40°. By April 8th the bunches were well out, and most of the shoots stopped; and a longer and higher day temperature being desirable with the longer day, the heat was not turned off till 8 o'clock P.M. on that date; but finding the temperature of the house was much higher in the morning than was anticipated, the heat was, on the following day (9th), turned off at 6 P.M., being turned on at 6 A.M. as usual; and this rule was adhered to till May 10th, except on two or three occasions between the 19th and 26th of April. The weather at this time was frosty, with frequent falls of snow or sleet; and the risk being too great, the heat was turned on for one hour in the evening—from 9 till 10. On these occasions the lowest temperature was registered, showing the precaution was necessary—otherwise 45° was the allowed minimum, but this was never reached, as, excepting at the date referred to, the outdoor temperature was seldom much below 40°. No account was kept of the day temperature, but as the weather was fine and bright during nearly the whole of the time, it was seldom that less than 85° max. was recorded, and not unfrequently 92° or more, so that I have for comparative purposes given the mean day temperature at 87° in the following table, as being probably very near the mark:—

TEMPERATURE OF MUSCAT VINERY.—Recorded by a "Negretti and Zambra"
self-registering thermometer, fractions omitted.

Date.	Morn. Temp.	REMARKS.	Date.	Morn. Temp.	REMARKS.
April 8	58	Heat turned off at 8 P.M.	April 26	51	Heat turned off at 6 P.M. from
" 9	52	Do. do. do. 6 do. from	" 27	52	this date.
" 10	52	this date.	" 28	53	
" 11	54		" 29	55	
" 12	55		" 30	55	Raisin de Calabrica coming
" 13	55				into flower.
" 14	52		May 1	59	Muscats do. do. do.
" 15	57		" 2	55	
" 16	60		" 3	55	
" 17	57		" 4	54	
" 18	56		" 5	52	
" 19	51		" 6	54	In flower generally.
" 20	50		" 7	55	
" 21	52		" 8	55	Earliest bunches set.
" 22	57		" 9	55	
" 23	51		" 10	55	Greater portion of the crop
" 24	51				set, and berries swelling;
" 25	51				heat turned off at 9 P.M.

Average lowest temperature, 54°; day, 87°; mean of 33 days, 70°.

I send you a sample bunch of Raisin de Calabrica and Muscat of Alexandria. When Muscats do not set, fruit falls off at once, like Peach-blossom, leaving the spurs of the bunch quite naked; but, in the samples sent, nearly every berry seems to have set, even to the extremities. In fact, our Muscats never set so well before. The reason why the night temperature never fell below 50° was, no doubt, owing to the bed of leaves in the house giving off heat. The hot-water pipes were generally cold by 9 or 10 o'clock every night, the thermometer fluctuating, as a rule, between 65° and 58° at the same time. I think the results go far to show that a frequent minimum temperature of 45° would have been borne with impunity, and possibly an occasional descent to 40° would have been harmless. Let it be remembered, however, that the Vines were treated to a low night temperature from the beginning. I hope no one will experiment by dropping the temperature of their vinery when the Vines are in flower, after having been pushed on to that stage in a high temperature. I may state that the Vines were drenched copiously with clean soft water through a fine syringe five days out of the seven while in flower. Had the usual high temperature of from 70° to 75° been given, in all probability just double the quantity of coals would have been consumed.

The bunches sent were cut from the centre of the house, 10 feet or more from the pipes, and are fair samples of the crop. It is further worth while remarking, that no time seems to have been lost. The vinery was started at the same date as last year, and the crop is just as forward now. Our late vinery, just about coming into flower, has been treated in the same way, and, so far as appearances go, with the same good results. It may be interesting to those who reckon much upon such matters, to compare the mean temperature in the above table with the temperature of the favourite climate of the Vine in spring.

WORTLEY.

J. SIMPSON.

[The two bunches of Grapes received from Mr Simpson were as perfect examples of thorough "setting" as could possibly be imagined. Now that Mr Simpson has replied twice to "D. J.'s" criticism, we think the subject had better drop as between them at least, especially as Mr Simpson does not wish to return to the subject again.—ED.]

NOTES ON HARDY CONIFERS.

LIBOCDRUS (THE INCENSE CEDAR).

THE name of this genus is derived from *libanos*, incense, and *Cedrus* the Cedar, in allusion to the strong odour emitted by the wood while burning. The few species of which it is composed have a general resemblance, both in foliage and habit of growth, to their near allies the Thujas, with which they were until recently grouped. They are all remarkably handsome evergreen trees, some of them very lofty, and highly valued for their timber, which is of excellent quality, and extensively used for almost every purpose.

Of the known species, only two can be recommended for outdoor cultivation in Britain: the others, though frequently met with, and deservedly popular as conservatory plants, are much too tender for the rigours of even ordinary winters.

L. Chilensis (*the Chilian Libocedrus*), also known as *Thuja Chilensis*, is found wild in the high sheltered valleys of the Andes of Chili, where it forms vast forests, and attains heights of from 60 to 80 feet. The timber is described as being hard and durable, of a fine yellow colour, and pleasantly fragrant. It was first introduced into British gardens in 1848, and has proved one of the most distinct and beautiful of coniferous shrubs; its close bushy habit, and warm green colour, forming a pleasing contrast to other species of a more diffuse habit and darker hue. It is, however, extremely susceptible of injury from autumn and spring frosts, and in many localities will not survive the winter without protection; though in such as are mild and wellsheltered, with the soil sufficiently dry and porous to insure the early ripening of the young shoots, it is found to stand remarkably well, forming a neat conical arborvitæ-like shrub, with a great profusion of slender branches, much divided into flat branchlets resembling the fronds of a Lycopodium. The leaves are very small, and have a bright shiny green colour, with a silvery glaucous line along the centre of the under surface. Though even under the most favourable circumstances a slow-growing plant in this country—and by no means likely to attain such heights as in its native valleys—it is well worthy of a trial wherever a situation suitable for its wants is at the disposal of the lover of a really handsome and distinct ornamental shrub.

L. Decurrens (*the Decurrent-leaved Libocedrus*).—This species, called in some collections "*Thuja gigantea*,"—a name which, as we have pointed out in a former paper, really belongs to the plant popularly known as "*Thuja Lobbii*,"—is indigenous to Upper California, where it is widely distributed, and occurs in considerable abundance at eleva-

tions of from 4000 to 5000 feet above the level of the sea : it was first sent home by Jeffrey in 1854, and is one of the best known and most ornamental of that distinguished collector's introductions. In its wild state it is described as a thick bushy tree of from 40 to 50 feet in height, with a stem from 7 to 9 feet in circumference near the ground.

As seen here, it is a plant of great beauty, with a close columnar habit of growth, the stem thickly clothed with long flattened Lycopod-like branches, divided into innumerable branchlets of a dark glossy green colour. Though quite hardy as far as frost is concerned, it is, like many of its allies, impatient of exposure to violent winds, and succeeds best in a sheltered situation ; and while it grows in almost any kind of soil, it is always to be seen in the highest perfection in a deep light loam, with a moderately dry and porous subsoil.

It is scarcely necessary to add that this is a strikingly effective plant, either in the mixed shrubbery or as a single specimen in the park or lawn ; and that its close spire-like habit of growth, combined with its dark sombre colour, renders it peculiarly useful for avenue rows, particularly when alternated with other Conifers of a more diffuse form, and of lighter green or glaucous tints, such as *Cedrus deodara* or *Cupressus Lambertiana*.

SCIADOPITYS VERTICILLATA (THE UMBRELLA PINE).

This genus, of which only one species is as yet known to botanists, is so named from the singular arrangement of its long leaves in regular whorls at the termination of the shoots, suggestive of the ribs of an umbrella. It is indigenous to mountains in Japan, and though extensively cultivated there, in gardens and in the vicinity of temples, is but sparingly met with in a wild state.

It is described as one of the most beautiful of Japanese Conifers, forming in its native habitats a tall stately conical tree of from 80 to 140 feet in height, densely furnished with alternate or verticillate branches, spreading out from the trunk horizontally. The leaves are from 2 to 4 inches long, linear, of a tough leathery texture, and of a warm green colour : they are produced at the point of each season's shoot, in whorls of from 30 to 40 ; and as they remain persistent for three years, three distinct sets, representing as many growths, are generally present. Though known and described many years before, this interesting plant was only introduced into Britain in 1861, seeds being early in that year sent home by Mr Fortune. From what we have seen of it in various districts of the country, it is, though of very slow growth, an exquisitely pretty little shrub—hardy enough if planted in a warm sheltered situation ; and though we do

not expect it will ever take a position as a timber-tree, or even rise to a stature lofty enough to form a prominent feature in our lawns or shrubberies, it is worthy of a place in any collection of ornamental shrubs. It requires a deep rich loamy soil, with a dry but cool subsoil.

HUGH FRASER.

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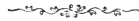
PROPAGATION OF LAPAGERIA ROSEA, &c.,
AT CHATSWORTH.

THE system of propagating this splendid climber by Mr Cully brings to mind a very successful mode of treating this plant as adopted by Mr Speed at Chatsworth. When there (on a visit for a few days) in February last, I was much struck with many things which Mr Speed practised well out of the "old rut." In a Camellia house, where a path leads along the back wall, a narrow bed of Lapageria was growing in strong loam. The shoots were growing as freely almost as a Passiflora; many of these were pegged down or covered with some of the loam, and sending out shoots white and strong as quills. Mr Speed pulled up a handful of these rooted layers with no more concern than as if they were so many weeds. Loam is not generally used for growing Lapageria, but here nothing could be more satisfactory. Loam, "pure and simple," seems to be the favourite soil with Mr Speed for many things which are generally grown in lighter stuff. In this same house Camellias are grown entirely in loam, and right well they thrive in it; probably no finer plants are to be found in Britain. We some time ago read of Camellias being so fine that they would "hide a bullock" in their centres! I would hardly venture to say that these Chatsworth bushes would hide such large quadrupeds, but I maintain they would give shelter to a small flock of sheep. The leaves were as large as laurel-leaves, and the plants were loaded with flowers, open and in bud. In a corridor I took note of a *Reticulata albapleno* with over 1000 blooms coming out; this was a trained plant. The oranges which we saw a few years ago in a sad plight are now fine healthy specimens. Mr Speed's reply to the question of what his secret is in securing such fine plants of the above, was, "Good loam resting on good drainage, cleanliness, and plenty of water." There is a great deal in these few words—watering especially; simple as it may appear to apply it, very few can water satisfactorily. Surface-dribbling kills half the plants which die every season in pots. Among other things very well done in this corridor are, *Chorozemas*, *Brugmansias*, *Rhyncospermums*, and *Correas*, planted out and trained, densely covering the wall. Passing from this to the large conservatory, which covers an acre of ground, it has greatly

improved since last we saw it. It retains all its "jungle" character, but the plants are clean, each standing clear of its fellow, and all in robust health. Many specimens planted out were grand compared with same kinds we have seen growing in pots and tubs, which too often are starved for want of root-room and moisture. I took note of many of the smaller specimens growing on side shelves; but time is too scarce at present to go further into details in this house. We passed to a block of span-roofed houses used for Orchids, foliage-plants, flowering stove-plants, and a heath-house. The last is one of Mr Speed's "special" houses, to which he told me that he has given more of his personal attention than to any other structure on the place; and much credit the plants it contains do him. The *Ericas* are a very choice selection, perfect in shape, but not stiff; few stakes are used, and we never saw plants in finer health. Here again cleanliness, fresh air, and judicious watering were important matters. The stoves were very gay, both with flowering and fine foliage plants. Conspicuous were the brightest yellow-leaved *Crotons* I ever saw. *Gesnerias* of sorts, *Anthuriums*, *Pandanus*, *Caladiums*, a few kinds, *Selaginella denticulata variegata*, *Maranta Veitchii*, *Scutellaria*, *Euphorbia jacquiniiflora*, with a number of Orchids in flower, such as *Dendrobiums* of sorts, *Phaius grandiflorus* (a specimen of these at each end of a house, we counted thirty-two blooms on one and thirty on the other; the spikes were very large). The plants were all of a useful size, standing singly, carefully arranged for effect, which was indeed very fine. Ferns were numerous and well grown. In the Orchid divisions, where the cream of the collection was staged, the *Vandas* are something wonderful, averaging about 7 feet high. There is a whole row of them along the centre in luxuriant health. One of the largest nursery growers of Orchids lately pronounced these to be the finest specimens in Europe; certainly by far the best I ever saw. *Lycastes* were among the finer specimens. One of *Skinnerii* had six spikes: the plant was growing in a 24-sized pot. *Calanthes* were numerous. Great numbers of *Calanthe veratrifolia* were potted in Mr Speed's favourite loam, and well they were thriving. We never saw *Dendrobium nobile* in finer bloom than they were in this house. The plants are kept very dwarf with a free use of the knife. Returning from these splendidly-managed houses, we cast glances over many other important features as we passed on to the kitchen-garden, where there are also numerous plant-houses. Among the most interesting is the *Amherstia*-house, where a large healthy specimen fills the whole centre; and many fine blooms were out at the time of my visit. Under the tree was a neat carpet of foliage plants, arranged with the same taste which characterised all the other plant structures. Pitcher-plants are

among Mr Speed's specialities, and may be classed with the "lions" of the gardens. The fruit-houses are all in excellent order: most of the vineries (sixteen in all) have been replanted since Mr Speed went to Chatsworth. His name is so favourably known as a fruit-grower, one need hardly say that every Vine and Peach-tree is in fine order, and many of them growing under difficult circumstances, from the overflow of the Derwent river. Pines, Strawberry-forcing, all kinds of forced vegetables, are very extensive. The kitchen-garden, which is over 12 acres in extent, has been much improved of late years. The extensive grounds are also receiving due attention. Chatsworth gardens are managed by eighty-five men under Mr Speed. M. TEMPLE.

BLenheim.



FLORIST FLOWERS.

THE ANTIRRHINUM.

PERHAPS there are those who still question the propriety of honouring the snapdragon so much as to admit it into the order of that high-caste group designated "Florist Flowers." We are perfectly well aware how jealously the walls and portals that encompass and guard these gems of *Flora* are manned against innovation, and therefore shall not presume further than ask permission to enter the Antirrhinum under this heading, for the convenience of those of our readers for whom these notes are principally intended.

The Antirrhinum is a hardy genus, in the ordinary sense of the term, being a native of England, although, like sundry other plants indigenous, somewhat susceptible to extreme frost in certain localities. According with its great merits, it is extensively patronised, being very beautiful whether considered for its diversity of colour or the unique formation of its flowers. Speaking of its usefulness in varied positions, the Antirrhinum is quite at home occupying the crevices of some venerable wall, adorning its time-eaten sides by massive spikes of glowing crimson, white, yellow, and other intervening hues; handsome on the flower-border; on the rockwork also; but for the parterre indispensable.

Although not extremely fastidious about the soil in which it is placed, it prefers most that of a rich light nature. There its full beauties are perfected when in the enjoyment of abundant sunshine. Moreover, under these circumstances there is less danger of frost killing it in winter than when the soil is of a heavy clayey kind.

Propagation.—This is effected both from seed and by cuttings. I do not know of any other plant to equal this as regards the number of first-class flowers derived from a single packet of seed, when the seed is got from a reliable source; a poor flower is quite the exception; so that one need not be afraid to plant a bed of seedlings in the most conspicuous part of a flower-garden. For spring planting, the seed should be sown in August, or early in September, and encouraged to grow by means of a little artificial heat—that is to say, in a bed where cuttings are striking. When the seedlings are ready to prick out, sort them into shallow well-drained boxes, and place them on a shelf near the glass in a greenhouse, where frost is excluded. Water sparingly all the winter, without allowing them once to get over dry; and

when the spring arrives, have them potted singly into 3-inch pots. Attend to this potting, although the plants can only occupy the pots for a week or two. They get established in a short time, forming a ball, and are less subject to be injuriously influenced by the weather when planted out, be it hot or cold. Seed may also be sown in the spring-time, either in a gentle heat or the open border. In the latter case, of course, flowers need not be expected in abundance until late in the season.

Propagation by Cuttings.—This is resorted to with those who desire to perpetuate good varieties, and it is advisable in this case to renew the entire stock by cuttings, which obviates the necessity of lifting the old plants, should a new arrangement be decided upon. The proper season to multiply the stock is at midsummer, when they are growing freely. The side-growths should be taken while they are yet succulent and stubby. Choose a soil of equal proportions, light loam, leaf-mould, and sand. Insert the cuttings rather thickly, and afford them the protection of a hand-glass or cold-frame, in a sunny sheltered part of the garden. Whitewash the glass or otherwise shade, and keep rather close, with sufficient moisture to encourage root-formation, until it is known that the cuttings are rooted, after which air may be more freely admitted, and the shading dispensed with. When well rooted, pot the young plants separately into 3-inch pots, and plunge them anew into the frame; using the precaution to shade for the week succeeding, to allow time for the plants to re-establish their roots in the soil, without suffering by the strong sunshine that may occur in the course of that time. Water ought always to be supplied in sufficient quantities to prevent the soil becoming too dry, but do not water in excess while winter lasts. Air freely in open dry weather, by removing the sashes. This keeps them both stubby and hardy, but a close frame would have the opposite effect, and cause them to be tender and lanky. Plant out in April, the weather permitting, allowing 14 inches between plants, both ways. Secure each plant by placing a stout stake to it. This will prevent winds breaking them after they become top-heavy.

NEW VARIETIES OF 1873.

Of these I select apart those that I have seen myself, while in the pride of their beauty. The Rival, white-tinted violet crimson, mottled and streaked with same colour, point of lip suffused yellow, extra. Charming, vivid yellow, striped scarlet, vermilion tube, and throat white, streaked violet purple, bold and distinct. Lina, ground white, almost wholly covered with streaks, stripes, and freckles of purple crimson, point of lip yellow. Avenir, lovely canary, heavily laid on the centre, point of flower changing to sulphur beneath, with a narrow streak of vermilion on each lower segment, cap sulphur. Gem of Yellows, grand rich golden flower. Octoroon, black-tinted rose. Aurora, pure white, slightly mottled with rosy crimson. Snowdrift, delicately-mottled rose. Antagonist, a noble flower and spike, white, under part overlaid brilliant yellow, with threads and freckles of vermilion, first-rate.

NEW SORTS OF 1872.

Delicatum, a magnificently bold flower of the white type, finely marked in spots and stripes of warm crimson. De Foe, deep crimson self, overshadowed by a bluish tinge, good. John Hodge, yellow, strongly marked with streaks of crimson. Novelty, crimson, marked with violet, fine. Monarch, a handsome self of the crimson type. Figaro, another self, with a fainter shade of yellow on the cap, excellent form. Snowflake, a soft white self of great merit. William Robinson, this is a telling variety, the flowers are bold, well expanded, large, of perfect form, and the colour brilliant crimson.

OLDER VARIETIES.

These I shall enumerate without much description, all of which may be relied on as being the foremost of quality. Bridesmaid, white ground; Climax, pale-rose ground; Admiral, bronze-yellow ground; Artist, purple ground; Europa, yellow ground; Firefly, scarlet and white; George Gordon, crimson self; Grand Duke, bronze and crimson; Hendersonii, well known, striped; Harlequin, cream-white and rose; Matildie, rose, mottled purple; Nina, freckled rose; Orange Boven, shining crimson, with orange lips. Queen of Crimson, The Bride, Undine, and Wrestler.

A. KERR.



PEACH CULTURE UNDER GLASS.

PRUNING AND TRAINING.

MANY ways of training and pruning the Peach and Nectarine have been practised and recommended. French horticulturists especially have been very successful in training them in several ways characterised by regularity and neatness. The single cordon as well as the multiciple cordon systems are favourite modes of training in France. Modifications partaking more or less of the French systems have been practised and recommended especially by Seymour in England. But the ordinary fan system of training is by far the most generally practised and liked. It is, especially under glass, the mode of training which the most successful forcers of the Peach have adopted, and it is that which I recommend. Many grand old examples of Peach-trees under glass are to be found in this country, which have all along been trained on the fan principle, and that are yet in fine bearing condition, being well furnished from top to bottom with young bearing wood. Taking a young tree (fig. 11 in May No.) which I have recommended for planting as the foundation of a fan-trained tree, different cultivators who are most in favour of this system of training would deal differently with the ten young growths with which it is furnished. Some would cut them all back again, to within five or six buds of their base; others would not shorten them at all, but would let them start into growth with as many young shoots as could be tied to the trellis without crowding them. What I have practised and would recommend is a mean between these two systems. The two centre shoots I would shorten back to half their length, the other eight shoots to be merely topped back to solid, well-ripened wood. The cutting somewhat closely back of the two centre ones makes it certain that two or three good strong growths will start from near their base to properly fill up the centre of the tree with leaders. Each of the other eight shoots should have all its buds removed by degrees, except one near the base, and one or two at equal distances between it and the leading bud, according

to the length of the shoots, two buds to be left on the under side ; if the shoots are long enough to have room for three on the upper side, the buds on the one side to alternate in position with those on the other side. These lateral growths with the leader are enough to lay a foundation for the future full-grown tree. The lateral growths should be allowed to grow without being stopped. Should the leaders show signs of growing very vigorously, at the expense of the side growths, stop them whenever they show such a tendency. This will cause them to make lateral growths freely, and equally balance the growth of all the young shoots. This encouragement of lateral growths, especially on the young wood in the centre of the tree, gives sufficient to furnish the tree without having recourse to the undesirable practice of first allowing a few very strong leaders to monopolise the sap, and then to cut them down at the winter pruning. In this way much time is gained in covering a wall or trellis with bearing wood.

A young tree thus managed on what may be termed a mean between the extension and cutting-hard-back system, produces a comparatively large well-furnished tree the autumn after it is planted, and one which requires very little winter pruning before starting it into another year's growth, when the same principle should be applied, especially to the extremities of the tree. All the winter pruning that is necessary is simply to shorten back the young growths to thoroughly-ripened wood, and to remove any lateral growths, the presence of which would crowd the tree. There is, however, comparatively little difficulty in ripening the wood of young Peaches under glass with the command of fire-heat. By the second autumn after planting, the trees will cover the trellis to a very considerable extent.

After the trees have grown and covered the space allotted to each, the system of pruning must be directed so as to continually keep the whole tree regularly supplied with young fruit-bearing wood. With a view to this, of course the yearly removal of old wood in winter, and the laying in of a corresponding amount of young wood in summer, must be carefully attended to. Fig. 13 gives an idea of what I mean by this, and will serve to illustrate the pruning out of old wood and laying in the new. The shoots represented by the solid lines are those which bore fruit last summer, and those shown by the dotted lines, growing from base of the fruit-bearing wood, are those laid in in summer to bear the following season. In pruning such a tree, the last year's wood, shown by the solid lines, is cut off close to the young wood which is to supply the next year's crop.

Some make a practice of cutting back the young bearing wood to two-thirds its length. I do not advocate this indiscriminately. When the shoots are long and not well ripened, and the buds consequently

weak, they should be shortened back to where the wood is firm, and always to a strong wood-bud. Peach-trees in a healthy condition have their buds in clusters of three, a wood-bud in the centre, and a fruit-bud on each side of it; and to such a cluster of buds they should always be cut when cut at all.

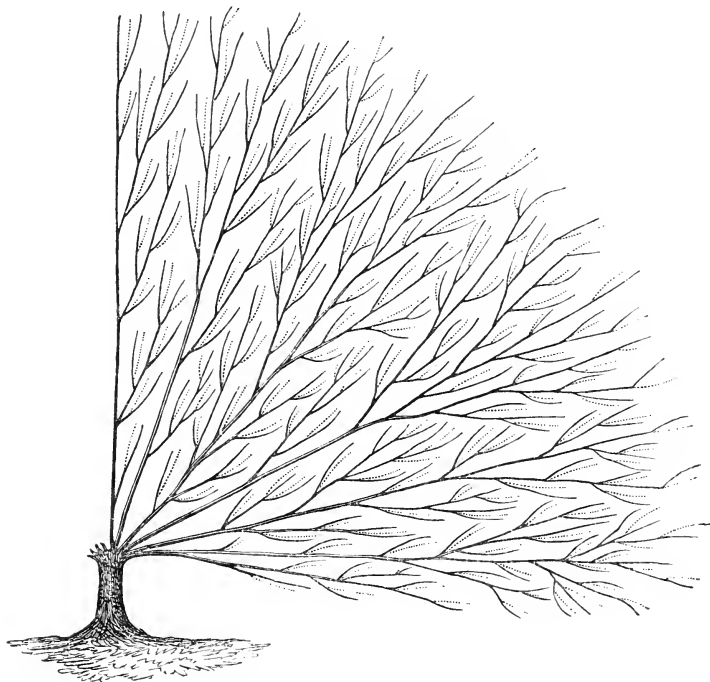


FIG. 13.

Well-established trees that have borne heavy crops regularly, and especially those that have been forced early, generally make shorter and stronger growths, well studded with strong clusters of buds. In this case it is unadvisable to shorten them back at all. A watchful eye must always be kept on the lower portions of the tree, so that they are not allowed to get bare of young fruit-bearing growths. It need scarcely be said that, from the fact that it is the young wood that bears, the tendency is for it to be in greatest abundance at the top.

The best guarantee against trees becoming bare of young bearing wood at their lowest parts, is to annually cut back a few healthy young growths to 2 or 3 eyes, and allow as many of these to bud and grow as may be required to keep up the supply of young wood. This is an indispensable necessity, from the fact that portions of old wood

have annually to be removed at the top of the tree. In practice, all other things being equal, there is little difficulty experienced in thus furnishing the lower portions of the tree with bearing wood. All cutting should be effected with a sharp thin knife; and whenever it becomes necessary to remove an old limb, the wound should be painted solidly over with white paint.

I have already referred to what is termed Seymour's system of training, from its having been first adopted at Carlton Hall in Yorkshire, by a gardener of that name. By this system a tree of great regularity and neatness is formed. It differs from the fan system of training in there being no lateral growths allowed on the lower sides of the leading branches. Figure 14 will illustrate this mode of training. "The first step in starting a newly-planted maiden tree upon Seymour's system, is to head the plant down to three eyes, each of which eyes will produce a shoot in summer; at pruning time head down the

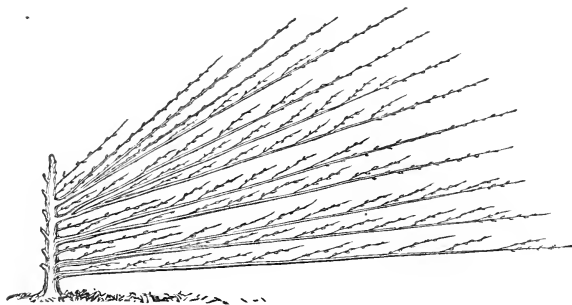


FIG. 14.

centre shoot of these to three eyes, to produce in the following summer three more shoots as before, leaving the side shoots always at full length. In spring all the buds on the lower sides of these side branches, and these from 9 to 12 inches asunder, are rubbed off, leaving those only which proceed from the upper side of the branch; when the young wood has extended to the length of 5 or 6 inches they are stopped, but the leading branches are not interfered with. Every year will produce a side shoot on each side of the tree, and the laterals that proceed from them at the distance we have stated are at first laid in between them, but the following spring these are removed from the wall and trained up on the main side branches. By the autumn of the third year the number of laterals will be doubled on the two side branches first laid in, as a new lateral is sure to spring from the base of the one laid in the previous season, as well as one from its point. As to winter pruning in the fourth year, all the laterals of two years' growth, and which have already produced a crop of

fruit, are to be removed entirely, and those of the previous summer's formation are to be unfastened from the wall and laid upon the main leading side branches in the place of those cut out."

My objection to this otherwise neat and very systematic mode of training is, in the first place, that it takes a much longer time to cover a given space of trellis or wall than it requires to do so on the fan system, when the needless and objectionable close-cutting-back system is not adhered to. Then again, when any of the leading branches give way—no uncommon thing in Peach-trees—a great gap in the tree is created, which it takes longer to make up than when a gap takes place in fan training.

The time for pruning the Peach under glass must be regulated by the time that forcing is commenced. Generally speaking, it is best to defer pruning till the first signs of the swelling of the buds, especially in the case of inexperienced pruners, as then wood-buds and fruit-buds are easily distinguished. This of course refers to the shortening back of all young wood that requires it.

D. T.



IVIES.

THE "Ivy" can be traced back to very early times, when it is said to have been used at religious ceremonies, and as garlands on festive occasions, and it is still used less or more for similar purposes. The present few remarks are more in favour of its more extensive use in flower-gardens, where the many distinct varieties can be planted as permanent edgings for covering stumps of trees, or under trees where little else will grow. There is now such a diversity of colours and shades amongst Ivies, that when much winter and spring bedding is to be done, they will be found indispensable; and many of them, when covering the space allotted to them, will stand comparison with some of the variegated Geraniums for effective display. All the green varieties do well when planted in good rich soil; but if many of the variegated ones are put into too rich soil they are apt to grow too strong, when the variegation is neither so pure nor so extensive. A little lime-rubbish mixed amongst the soil will be found beneficial in bringing out the variegation. We find them more satisfactory than any of the general bedding-plants for inner courtyards. Where the sun is entirely excluded, the Geraniums, &c., make plenty of growth but scarcely any flowers: the Ivies are quite at home in shade, and are very effective when looked down upon from windows and balconies. One great recommendation is, that they are always the same at all seasons. An edging eighteen inches wide, with a centre of some other variety, is very effective. They will require frequent attention to

keep the shoots from running into each other, for if this is allowed, the effect is not so good. It appears, also, to be at home amongst petrified stone, of which we have several beds, where they are more exposed to the sun. These beds are raised above the ground level considerably with the stone, and the crevices filled up with soil. Each bed is planted with a distinct sort. The green varieties have a light-coloured flowering Clematis, and the variegated sorts have a dark Clematis planted along with them; when, in a few years, all get strong and into good condition, they are expected to be very effective. The blooms of the Clematis ought to show well on the bed of Ivies; in winter they can be pruned in a little, when a few minutes will soon cover the shoots that are left by putting them down amongst the Ivy. When grown in beds they should never be allowed to straggle, but keep all shoots closely pegged in their proper place. Many, if not most of these Ivies, can be grown in pots with little or no trouble. By having a collection of the best sorts, they can be used to great advantage in the flower-beds in winter, where they make grand centres for large beds; and as single specimens, large plants can be grown in medium-sized pots, and will require little else for several years but a slight top-dressing when removed from the beds in spring to be plunged in their summer quarters, which should be where the mid-day sun cannot reach them, in which position the colours of some of them are richer. For walls having north aspects, nothing looks so well, taking all the season through, as a good collection of Ivies when carefully planted for effect. If they were of recent introduction, there would have been a great stir made about them: although many of the finer kinds are new, still, you will hear it said, they are but "Ivies." The first time we saw a good collection was at Wimbledon, where they were planted to cover pillars of a boundary walk, when we were quite taken with them, and so would any one, unless thoroughly prejudiced against them. The names of a few may not be out of place:—

Algeriensis, fine strong growing, with large green foliage: it makes a good pot-plant, soon getting to a large size.

Canariensis, large green-leaved sort, rich glossy colour, very free growing.

Canariensis marmorata alba. This is a fine silver variegated variety. The young leaves sometimes all of a silvery cloud, while others are mottled on a green ground. We had an edging of this 18 inches wide round a bed last year, filled in with East Lothian purple stock, which was much admired.

Canariensis aurea maculata, resembles the previous one in growth, beautiful golden variegation.

Cænwoviliana, beautiful small cut leaf, light green, runs freely, and should be in every collection.

Donerailense, very small, beautiful cut leaf.

Clouded Gold is another fine effective variety.

Digitata, dark-green foliage, free grower, and good pot variety.

Cavendishii, smallish leaf, centre parts of a dull green, the edge beautiful silver grey; a very pretty pot-plant.

Aurea densa, fine variegation, good for pots.

Aurea maculata, sometimes nearly a whole shoot of one year's growth will come silvery white.

Marginata Cullisi should be in all collections; either as a wall plant or for edgings it is unequalled.

Palmata, beautiful golden variegation.

Rhombea, another fine silver-edged sort.

Rægneriana, *Sagittæfolia*, and several more, should not be neglected if a good collection is wanted. There are several varieties very much alike, which should not be neglected, as a good assortment cannot be had without a few resembling each other a little. Those that are more properly designated "Tree," or "Bush Ivies," are more slow growers in a general way; but nice young healthy plants, with proper care and attention, soon form handsome little trees; several of them bear berries in winter, which adds greatly to their appearance and value as a winter decoration plant. There are a good many in this section, but 12 or 15 of the most distinct varieties are ample. When the real value of Ivies is found out, they cannot fail to be more extensively used; and no doubt some one will take them up, and, judging from what has been done amongst them the last few years, will bring them to as great perfection as the Golden and Bronze Geraniums. Edgings in winter and spring of a Mrs Pollock-like Ivy, with Imperial Blue Pansy, is not too much to hope for. A. H.



NOTES ON GREENHOUSE SHRUBS.

Aphelaxis humilis.—In one or other of its several varieties this is the best known, and the best worth growing, of this pretty group of greenhouse plants. There are several other species which have been introduced from time to time, but none of them have risen in popularity, as decorative plants, so much as the one named above. All the species were better known formerly under the names *Helichrysum* or *Helipterum*—two genera of popular annuals with everlasting flowers. The flowers of *Aphelaxis*, too, are everlasting, but resemble more closely in form and colour *Rhodanthe* than *Helichrysum*. *Aphelaxis humilis* is a pretty plant and interesting, whether in flower or not, somewhat straggling in habit, but capable, with a little care and skill, of being manipulated into specimens of perfect symmetry, and when well bloomed it is an ornament of a choice and distinct kind, lasting for many weeks with little diminution of its freshness. There are several varieties differing from the ordinary form in the size and tint of the flowers. Those of the ordinary *humilis* are pink, deeper externally than inside; in *A. h. macrantha* they are larger, with deeper

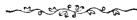
colour, inside and outside purplish ; *A. h. purpurea* has the large flowers of *macrantha*, with the outer scales deep purple, and *A. h. rosea* has large bright rose-coloured flowers. *Macrantha* and *purpurea* are the most effective varieties, and the most vigorous growers. Their culture is very simple : they grow admirably in a light rich compost made up of fibrous peat one part, and sandy fibrous loam two parts, giving sand liberally, more or less, according as it may be deficient or abundant in the compost naturally. The drainage requires to be good. Cool greenhouse treatment suits them best, with light airy position in winter. A cold frame, or the open air in an open but sheltered spot in summer, is preferable to the greenhouse ; but they should be housed in autumn, before the rains drench the pots and destroy the roots. They are usually trained in the form of dwarf bush specimens, and, to my mind, this appears the most natural way of doing them ; but variety of form is often necessary as well as pleasing, and may be obtained with comparative ease with these greenhouse everlastings. They can be trained into the form of pyramids or dwarf standards with as much ease almost as a *Fuchsia* or *Azalea*, only stakes and tying are necessary in these styles in this case. For standards, a neat wire trellis of the umbrella shape is indispensable ; but for pyramids only a stout central stake is necessary, for the purpose of supporting the main stem or stems, as it is better to be provided with two or three rather than dependent on one in case of accidents. The plant should be formed by pruning more closely above than below, allowing the central leaders to extend till the requisite height is reached, and taking care to have the sides equally furnished with laterals at all points. Plants not fully formed should not be allowed to flower much, if any, especially those intended for pyramids. They will the more quickly become enjoyable objects, if their energies are concentrated on growth for the first two years from cuttings, during which period shifting into larger pots and stopping the shoots should be carefully attended to in accordance with the rate of growth. Large shifts should not be given at any time, and the new soil should be made rather firm as it is filled into the pots. Well-established plants require to have the old shoots thinned out moderately annually, in order to keep up a supply of strong healthy laterals. No matter what form they are grown in, these when allowed to extend become weak and unmanageable, and yield small flowers in small numbers. They are easily propagated by cuttings of ripe but not hard shoots as early as they can be got in the summer. If the propagating house is not too airy no bell-glass is necessary. They are somewhat liable to damp, and if a glass must be used, it should be removed at night, or during part of the night and dull days. Sandy peat is most suitable for the cuttings.

Beaufortia.—This is a handsome genus of evergreen shrubs from New Holland, so named in honour of Mary, Duchess of Beaufort, a distinguished patron of gardening who lived in the early part of last century. They are free-growing plants, capable of being developed into a considerable size, and therefore well adapted for planting out in roomy conservatories as permanent plants. The larger growers are in fact better fitted for this way of culture than pots; they grow more freely and flower better. Light sandy loam, with about a fourth part of good peat, suits them well; the drainage should be thorough. They like a free exposure to light if planted out, but in pots they are better of a little shade during the hottest part of the day in the middle of summer. They bear a very low greenhouse temperature in winter. Cuttings of half-ripened shoots root freely in sandy peat in a cool propagating house. Keep them close with a bell-glass during the day and shaded; but tilt the glass, or remove it at night. All flower early in summer.

B. Dampieri.—This is one of the smallest of the group—a twiggy yet neat-growing plant, the branches of which are crowded in a regular manner with small bright green leaves. The clusters of flowers are pink, and the most conspicuous organs in them are the stamens, which are very numerous, and the pistils. This species is best fitted for pot-culture.

B. decussata.—A stronger grower than the last. It forms a beautiful shrub when planted out, capable by moderate pinching during the early part of the growing season of being made into a densely-furnished plant in any style. It is also a free bloomer if care is taken to ripen the wood properly before winter sets in. Flowers scarlet.

B. splendens.—This is perhaps the showiest species, and splendid it is when well grown and well bloomed. As in all the others the stamens and pistils are the showiest parts of the flowers, and they are deep brilliant scarlet. It is a vigorous grower, and should be managed as to pinching in the same way as the last. W. S.



HINTS FOR AMATEURS.—JUNE.

FRUIT-TREES, where in health, will now be making growth; and where space is to be filled up, steps should now be taken to secure that end. Direct as many shoots as may be required over the empty wall, so that when they have grown as far as required, short side shoots will complete the tree—the latter, of course, to come next season. It is a too common practice to allow trees to become too thick at the beginning: in such a condition they never fruit freely. Gross watery growths should be stopped, which will cause them to send out a number of

lateral shoots: as many of them as may be wanted can be fastened to the wall, and the others may be stopped to form spurs;—the latter should be formed close to the wall, rubbing every outward-growing shoot off. This is the most important time to get well-formed trees established. Old trees need not be kept too hard stopped in, as they are not so likely to become too gross; but in all cases, crowding of wood and foliage is a great evil. Trees lately planted may require a good soaking of water. The surface of the soil should not be allowed to become hard and cracked. Standard trees may be helped to form pyramids or neat bush trees by timely thinning and training. When leading shoots are left to themselves, others suffer in proportion to the vigour of the former. This also applies to Gooseberries and Currants; but time can seldom be spared to attend to these operations at this important season. Raspberries should be gone through with a fork, and the superfluous suckers taken out, leaving enough for next year's supply. Where crops of fruit are set thickly they should be thinned by degrees:—much may fall off stone fruit, Pears, and Apples. As a rule, all thinning required, whether wood or fruit, should be done by degrees. If insects make their appearance they must be promptly attacked—delay with them is certain ruin. The curling of Apricot-trees is a signal that enemies are encamped there, and can only be got rid of by hand-picking. Alum and hellebore-powder mixed in water and syringed on bushes keeps caterpillars off. Soap-suds, with some water added to it, is a useful application in the early part of growth. Strawberries will now require straw or other material put down to keep the fruit clean. Short grass is still used by some, but, to say the least of it, the practice is a bad one: weeds and slugs have a benefit from this material, and the fruit is apt to rot or get a bad taste from it. A good soaking of manure-water does much for Strawberries when applied just as the fruit is set, and mulching applied afterwards.

If the season is showery, as it is while I write, weeds and grass will give much labour. I can from experience sympathise with those who have much of this to do with limited means, while other work is also abundant; gardening then becomes a struggle, and not a pleasure. It is much better to limit the extent of lawns, walks, flower-beds, &c., and do them well, rather than have a large space badly kept. Dandelions, Docks, and other deeply-rooted weeds, can be got rid of by putting salt in the holes where the roots have been pulled out. Get as much out of the ground as possible. Where lawns and walks are situated near to old pastures and wild-growing plantations, deep-rooted weeds will always be abundant. In flower-gardens most of the work in the way of planting will be done: a free surface and plenty of moisture are now the principal helps to secure free growth. Continued drench-

ings of cold water will only retard growth : give it in abundance when required, and have done with it.

Dahlias are safer when they are staked as soon as planted : a good watering when weather is mild, a neat mulching of rotten manure covered with soil, will generally keep the plants all right for a long time, and then manure-water can be given with great advantage. Roses may be attacked with grubs—hand-picking is the only sure remedy we know for getting rid of the pest. Brompton Stocks to stand the winter may be sown. Carnations, Picotees, and Pinks may be propagated by pipings : under hand-lights in a shady position suits well. Ranunculus will now take plenty of water—manure-water is advantageous to such gross feeders. A sowing of Sweet Peas may be made for a late supply. Mignonette may yet be sown. Propagate Pansies from side shoots. Cinerarias, Chrysanthemums, Primulas, and Calceolarias must have careful attention : with water, cleanliness, &c., as formerly advised, free healthy growth should be made now. Stake Lilliums, and place the plants in a protected position out of doors : help them with manure-water when they are coming into flower. All plants for autumn flowering of a half-hardy character should be placed out of doors in a protected position, and kept clean and well supplied with water. A pit or frame where lights can be used during heavy rains is advantageous. Shift Fuchsias liberally for late blooming. They like plenty of pot-room and good turfy loam. Manure-water when they are in flower is of great service to them. Zonale Pelargoniums—ornamental-leaved kinds for decoration under glass—should now make free growth, and not be cramped in too small pots. Lobelias, shrubby Calceolarias, Salvias, Verbenas (show kinds), Balsams, Cockscombs, Globe Amaranthus, &c., in absence of more rare things, should have their share of attention, as where a “blaze” of flower is required in a conservatory, they will certainly give it. Common Ferns from the woods we have often used for mixing with flowering plants, and they are as telling as many of the best exotics. But these common things in a starved condition are worthless.

Shading of plants in flower from sun now requires attention, to prolong their beauty. All newly-potted plants (especially seedlings) require to be kept shaded and rather close till free growth again takes place ; then they want abundance of air. Camellias, for early flowering, may be taken out of heat as soon as their bloom-buds are formed. Under a framework of canvas or other shady material is a good position for them till they are fit to stand the weather : under the shade of a wall or fence answers when taken there on a mild dull day. Sudden changes often cause Camellias to shed their bloom-buds. Those making their wood should have plenty of moisture, and be shaded from

strong sunshine. Keep them and Oranges free from scale, &c. Winter-flowering Heaths, Epacris, Oranges, Cytisus, Acacias, and other winter-flowering plants, should be hardened gradually, when they have made plenty of growth. They require abundance of water and free drainage. Plants in pots are all the better if they can be tilted up to throw off heavy rains. Achimenes, Gloxinias, Gesnerias, Eucharis Amazonica, Poinsettias, and a host of similar things, can be grown on in frames or pits during this season. Plenty of tepid water at their roots, shifting to larger pots as they require it, turning round to the light, syringing and shutting up early with sun-heat, airing judiciously, and shading from sun, are their chief requirements. Turfy loam, peat, and sand will grow these well. All stove-plants require shading more or less.

M. T.



RUST ON GRAPES.

In his Treatise on the Grape Vine, Mr W. Thomson gives it as his opinion that rust on Grapes is caused by sulphur coming in contact with the fruit at a very early stage of its development. Rust has been ascribed to many causes, and the above statement was at first received with some little hesitation. We beg to state a few facts which show that rust is caused by sulphur. In an old house where the Vines had of late years been neglected—a prey to mildew and other ills—an effort was last winter made to get these Vines into a more satisfactory state. Vines, house, and everything, were thoroughly cleansed, and by-and-by the Vines were gently moved on by a little fire-heat. The house is heated by an old-fashioned brick flue, which gets rather hot at the end adjoining the furnace. The first Vine just over this hot flue broke first; its Grapes were in flower while the rest were only just showing. At this stage, the weather being dull and cold, mildew was suspected, and sulphur was used both on the foliage and on the flue. The Grapes on the early Vine are now brown with rust, while not a speck shows where the bunches were not developed at the time of its application; but those in bloom and coming in bloom have suffered much, and prove the opinion above quoted to be correct.

S. X.

May 14, 1873.

[Those who doubt that rust is caused by sulphur-fumes should coat their pipes with sulphur, and heat them well when the Grapes are young, and they will doubt it no longer.—Ed.]



NOTES ON PROPAGATION.

PROPAGATION, as applied to the vegetable world, may be defined as the art of multiplying the many and various plants cultivated in our gardens, either for their use or beauty. It is a subject well worth the attention of all, more especially the rising generation of young gardeners, for whom these few remarks are specially intended. I am aware there are many who attempt to set down young gardeners as a set of

useless dolts, who do not care either for private study or self-improvement. Doubtless there are black sheep in every flock; but I am proud to know that there are hundreds of hard-working, clear-thinking young gardeners, who anxiously look for their copy of this or other gardening periodical; and not only do they read, but "mark, learn, and inwardly digest," what is therein written for their guidance and benefit.

Propagation is effected by many different processes; and it is the duty and interest of the cultivator to discover and employ that plan or course of procedure best suited to the requirements of the subject he wishes to increase. A Fuchsia, for example, is easily multiplied *ad infinitum* by cuttings of the young wood. But suppose a Clematis is the subject we wish to propagate, or a Dammara, we shall then find that grafting a portion of wood similar to a cutting on pieces of the roots is the most expeditious and effective plan.

Although most "soft-wooded" and many "hard-wooded plants" are readily propagated from cuttings of the young wood, still we need not look far for exceptions to the general rule. The Grape Vine, for example, is best propagated from modified cuttings called "eyes," the thoroughly-ripened wood of the previous season's growth being cut up for the purpose; and the same remark applies to Poinsettia pulcherrima. I may remark, that in some cases much time and trouble may be saved by inserting large cuttings. In the case of Justicea carnea, Clerodendron fallax, and C. fragrans, I have repeatedly struck pieces 1 foot or more long, and having three or four pairs of fine leaves. These are nice plants when rooted, which they will be in about a fortnight if the cutting-pots are plunged in a slight bottom-heat, and kept well sprinkled and moderately close. Again, the tops of Draecenas, such as D. gracilis, D. congesta, D. terminalis, and D. Cooperii, are easily struck if taken off with a clean cut, and plunged in bottom-heat as recommended above. These tops may be taken off tall leggy specimens, and rooted in three weeks, forming nice little specimens for table-work, or for the drawing-room vases. If, however, they are for the latter purpose, they must be carefully hardened off after being taken from the propagating case.

Many plants—as Gloxinias, large-leaved Begonias, and Bertolonias—may be readily increased by pegging the leaves down on pans of light earth surfaced with sand. The midribs and principal veins should be partly severed with a sharp knife previous to their being pegged down, and then several individuals will result from each separate leaf so treated.

Many plants are increased from what are technically called "offsets." These are produced naturally by many bulbous plants; but

sometimes the cultivator employs art to accelerate the process. This is specially the case with the Hyacinth. The Dutch growers sever the bulbs in a manner somewhat analogous to that in which the Potato-planter increases his "sets." This induces them to produce numerous "offsets" or bulbels from the part so severed, and these last are grown on as rapidly as possible to increase the stock. *Calanthes* readily produce new pseudo-bulbs from the scar caused by breaking the bulb where it is contracted in the centre, and also from the apices of entire pseudo-bulbs; while our pretty little friend, *Pleione humilis*, frequently bears a whole progeny of "offsets" on its old pseudo-bulbs previous to their ultimate decay. Every Orchid-grower knows with what profusion "offsets" are borne on the pseudo-bulbs of *Dendrobium nobile* and other species. When the preceding season's growth has not been well ripened, these "offsets" are produced in place of flowers.

Some plants—as *Solanums*, *Sonchus*, *Ferdinandia*, and *Trichinium*—are easily propagated in any quantity by cuttings of their *roots*. Experiments in this direction would doubtless extend the number of plants, which may be increased by the adventitious buds on their roots when the latter are placed in circumstances favourable to their production.

Grafting is not much resorted to by English gardeners in the multiplication of flowering or ornamental plants, although it is as applicable to the latter as it is to fruit-trees. Continental horticulturists avail themselves of this simple means of propagation very largely; and our own nurserymen are beginning to apply the art more generally in the case of *Roses*, *Clematis*, *Daphne*, *Prunus*, and many other flowering plants and ornamental shrubs. One of the quickest methods by which a stock of that admirable window or decorative plant, *Ficus elastica*, can be obtained, is to graft its shoots on the roots of the common Fig, *Ficus carica*.

Any one who has a close propagating case or two at hand may gain a great amount of practical information by experimenting with cuttings and scions on different stocks. Information gained in this way is far preferable to that obtained from books, the latter being the aids to knowledge, and the former the real knowledge itself. In the last issue of the 'Gardener,' mention was made of the late Thomas Andrew Knight, Esq., than whom few have derived more knowledge by way of experiment and studying out cause and effect. In the 'Transactions of the Horticultural Society of London' will be found many valuable papers written by himself, together with records of his instructive experiments, from which many of our best practical gardeners and botanists—including the late Dr Lindley—have been content to glean much valuable information.

F. W. B.

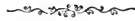
RHODODENDRONS.

OF all our common shrubs I often wonder that the commoner varieties of the Rhododendrons are not far more extensively used. Many of the common shrubs are well adapted for giving shelter, while, as to ornament and general appearance, they are by no means superior to the common sorts of Rhododendrons. I have in the course of my practice planted many shrubs, and whenever I could I used a good number of the common Rhododendrons. They have many desirable qualities—not that there is by any means the least objection to the better sorts of Rhododendrons, when a few shillings, as to price, is of very little consideration. The general idea that Rhododendrons will not live in any soil except that of a peaty nature, may be greatly qualified according to many local constituents in the soil. There are two things which Rhododendrons are very impatient of, stiff adhesive clay, and chalky soils: perhaps as much as any kind of shrubs, the Rhododendron dislikes a bottom where the water cannot pass away freely. I have seen the common sorts grown about shrubberies and grounds from self-sown seed by the thousand on a poor hungry pebbly soil having only a few inches of a peaty nature on the surface, principally from the decay of vegetable substances in the course of ages; and when this soil was trenched about a foot deep, nothing could do better in it than Rhododendrons.

Rhododendrons are a surface-rooting plant, seldom, even in old well-established plants, having strong, thick, extending roots. Several years ago we had to do with some very old and very large plants: a portion of them had had a trench dug out for them of about 18 inches deep, which trench had been filled up with peat, and this had become a compact mass, just such as would make good fuel when well dried. The roots had scarcely gone over 6 inches deep into it, and as the leaves had accumulated upon the surface in the course of many years (they had been planted perhaps 100 years), immediately under these leaves the roots were nearly all found in a compact mass of small fibres. Another lot of plants close by, where the soil was well mixed with small pebbles, sent their roots deep into the soil. Some years ago I planted a good many hybrid Rhododendrons in borders. The soil generally was of a good loamy texture, what might be termed good wheat land. It was well trenched. Other shrubs were planted behind the Rhododendrons, and flower-borders formed in front of them. Selecting nice bushy plants of Rhododendrons, I hollowed out a place for each plant, into which was put a small barrowful of peat formed from the decayed fronds of *Pteris aquilina* and oak-tree leaves, from where possibly it had been accumulating for many ages. This peat was placed round the small ball of the young plants, and in two years'

time they had many hundreds of little rootlets ramifying through the peat in all directions. Nothing can be so easily removed when thus managed, for either forcing or to rearrange in the borders, clumps, or elsewhere.

G. DAWSON.



LOCAL NOTES ON RARE OR UNCOMMON WILD PLANTS.

NO. IV.—YETHOLM AND THE CHEVIOTS.

“EVERYBODY” has heard of Yetholm, it being the capital of that “mysterious race” the gipsies in Scotland; there they still have a queen and keep up a semblance of royalty, but as a distinct race they are fast disappearing: and also of “Cheviot’s mountains blue,” famed in Border song and story. The once great forest of Cheviot was the scene of “Chevy Chase,” but now there are very few remnants of the forest left, and not a vestige of the roes and red-deer that found shelter in it.

The Cheviots are a range of porphyritic hills, occupying an area of about 300 square miles; Cheviot, the highest, is 2676 feet above sea-level. The view from the top of Cheviot is magnificent; to the north and north-west, the valley of the Tweed and Teviotdale lies spread out like a gigantic map, beyond which rise the Lammermoors; eastward is the sea; southward the view stretches over Northumberland and Durham to Yorkshire; while to the south-west the eye wanders over a series of rounded hills, each of which has its name and story, until lost in the distance.

On the roadside, between Kelso and Yetholm, we find *Lepigonum rubrum* and *Cerastium arvense*: this, our only ornamental *Cerastium*, is common hereabouts, although rare in most parts of the country. On the moor at Bowmont Forest there is plenty of that fine bog plant, *Parnassia palustris*, and *Radiola millegrana*. In the plantation on the roadside, at “Patie’s o’ the Muir,” there is abundance of the Globe-flower, *Trollius europæus*, long cultivated in flower-borders, and well worthy its place there. *Goodyera repens* grows in an adjoining plantation, which, so far as I am aware, is the most southerly station for this plant in Great Britain.

About a mile from Yetholm lies Yetholm Loch, a fine sheet of water, of about 40 acres in extent, at the north-east end of which was the original of Sir W. Scott’s Castle of Avenel, now the site of Loch-tower hinds’ houses. What a change between then and now! But at the time of which Scott writes, the Loch would extend for several miles—to Bowmont water on the east, and to near Linton Loch on the west; but the lochs and bogs are fast disappearing, and with them many interesting plants which grow in them. On the north side, overlooking the Loch, is Lochside, the finely-situated residence of

R. Oliver, Esq. Growing in the loch, on muddy spots, is the Yellow Water-Lily, *Nuphar lutea*, *Callitriche autumnalis*, *Ceratophyllum*—probably *demersum*, *Potamogeton pectinatus*, &c. On the margin, *Cicuta virosa*, *Imperatoria Ostruthium*, *Mentha sativa*, *Lycopus europæus*, *Scutellaria galericulata*, *Littorella lacustris*, *Alisma plantago*, *Scirpus lacustris*, and *Salix pentandra*. The Bay-leaved Willow, as seen growing here, is a beautiful tree about 20 feet high, and the same in diameter of branches; the barren tree is the finest. There is a bog at the west end of the loch, which is gay throughout the summer and autumn with a great variety of showy plants, amongst which are *Ranunculus Lingua*, *Viola palustris*, *Valeriana dioica*, *Senecio aquaticus*, *Menyanthes trifoliata*, *Myosotis palustris*, *M. repens*, *M. cæspitosa*, *Orchis maculata*, *O. latifolia*, *O. incarnata*, (?) *Narthecium ossifragum*, *Typha latifolia*, the common cotton-grass, and many species of *Carex*, one of which, *C. paniculata*, is very useful when crossing the bog, especially if it should be near any plant you wish to lift, as the large “tussacks”—many of them being 2 feet above the level—keep you from sinking.

On Lochtower fields I have found the following: *Alyssum calycinum*, *Fedia dentata*, *Anthemis arvensis*, *Centaurea cyanus*—a fine annual, once common but now becoming rare; *Carduus nutans*, thought by many to be the “Scotch Thistle,” a title which it has a better claim to than the cotton thistle, *Onopordum Acanthium*, which is not indigenous to Scotland, although it is often sold by seedsmen as the true Scotch Thistle,—it is most likely that the Scotch Thistle is merely a heraldic and not a botanical species; *Calamintha Acinos*, and *Galeopsis versicolor*.

In some of the fields in the neighbourhood of Yetholm, *Ranunculus hirsutus* is plentiful, and, on the hills, *Viola lutea* (about the time that *Viola lutea* was first brought into notice as a bedding plant, I observed an advertisement, advising intending purchasers to apply as soon as possible, as the stock of it was limited, and in few hands, or words to that effect—the advertiser had never been amongst the Cheviots); *Scabiosa columbaria*, *Hieracium pallidum*, and several forms of *H. murorum* and *H. vulgatum*, of which, as Dr Johnston says, “We have specimens which, like the distanced horse, can be placed nowhere.”

In the gravelly vale of Bowmont Water, above Yetholm, are the following: *Teesdalia nudicaulis*, *Trifolium arvense*, *Vicia Bobartii*, *Antennaria margaritacea*, along with two of our showiest and best-known native plants, the Viper’s Bugloss, *Echium vulgare*, and the Foxglove, *Digitalis purpurea*. In the damper places there are plenty of *Veronica anagallis*, and *Ænanthe crocata*. On the roadside, farther up the water, there is abundance of *Anchusa sempervirens*, and straggling plants of Chicory, *Cichorium intybus*. About six miles farther west there is a station for *Turritis glabra*.

From Yetholm to Cheviot is about seven miles. On the Curr, a hill about halfway, I have found *Polemonium caeruleum*. On arriving at the foot of Cheviot we come to the College burn, instead of crossing which it is better to follow it to its head, ascending by Henhole, the finest and rockiest glen on Cheviot, it being a succession of linnis from near the summit of the hill to its base. Indeed it is the best plan for the botanist to follow each rill to its well-head, when he will find many interesting spots that will amply repay him. As an instance, when ascending by one of the burns that run down the north-west side, about half-way to the summit, I came upon the following interesting group: an ancient Rowan-tree, overhanging a small waterfall, under which, and growing luxuriantly, were the Oak and Beech Ferns, intermixed with the graceful Wood Horsetail, along with tufts of the Mountain Buckler and the elegant Lady Fern. On the left-hand side, when ascending by Henhole, the Mountain Parsley, *Allosorus crispus*, is abundant. At the rockiest part of the glen—near where a pair of ravens have had their nest from time immemorial—*Saxifraga hypnoides*, the Alpine form of *Cochlearia officinalis*, and *Cystopteris fragilis* are plentiful. Scattered about in wet places are *Sedum villosum*, *Saxifraga stellaris*, and *Epilobium alsinifolium*; *Rhodiola rosea*, *Antennaria dioica*, and the viviparous variety of the Sheep's Fescue on the drier parts. On the more level ground, near the top of the hill, *Rubus chamæmorus* is abundant, along with *Vaccinium vitis-idaea*, *Lycopodium clavatum*, *L. alpinum*, *L. selago*, and on the burn-sides *L. selaginoides*. In another fine glen, named the Bizzle, besides many of the plants already mentioned, we find *Corydalis claviculata*, *Carduus heterophyllus*, *Melampyrum montanum* (Johnston), and *Asplenium viride*. This ravine is also interesting to the ornithologist, for there one of our finest birds of prey, the peregrine falcon, still breeds annually. But perhaps the most interesting plant found on Cheviot is *Cornus suecica*; it was first discovered there by Dr Penny, some time before 1568. Ray found it there in June 1671, "and thenceforward the hill was classical ground to the botanist."

A. B.

KELSO.

RHODODENDRON AUCKLANDII.

A DELIGHTFUL surprise awaited me on calling to see this noble plant in flower in the secluded little glass-garden of Mr M'Kelvie, Osborne Terrace, Edinburgh. I had not seen *Rhododendron Aucklandii* before, and only knew it from report to be one of the foremost of the Himalayan species. There are some who dispute this one being the true *Aucklandii*; however, I have sent you a flower and leaf, in the hope that you, Mr Editor, may be able to solve the question.

The plant referred to was bought by Mr M'Kelvie some years ago, a seedling without name, and he had it planted out into a border in one of his vineries. Since then it has grown apace, and is now a sturdy tree of 5 feet high by 3 wide. It has borne seven clusters of blossoms this spring, and has attracted numerous visitors to admire its beauty since its flowers opened. The single blossoms average 4 inches in diameter, and are of the softest and purest white, texture solid and silky. The base of the interior is dimly marked star-shape in white, the points of which disappear into a zone of delicate green suffused with canary yellow. Its cup at top is divided into five deep rounded segments, that to some extent overlap each other at the point where they unite. The opening is much expanded, but suddenly contracts at the base of the segments, and gradually tapers to a point beneath. The flower is perfection after its kind, so far as form is concerned. These adding to its other property—namely, its delightful fragrance—constitute *R. Aucklandii* one of Nature's choicest gifts. Anent habit, I think it must be less favourably spoken of, being irregular in its mode of growth, resembling in this more a *Nerium* than a *Rhododendron*. The shoots are produced long and straight, without much conformity to order. The foliage is handsome, of the deepest glossy green, thickly freckled with minute specks of brown, pretty regularly disposed over the entire upper surface, while beneath they are a green of pale delicate hue, prominently overspread by the veins; in outline the leaves are linear-lanceolate.

Besides this *Rhododendron*, Mr M'Kelvie and his gardener, Mr Finlay, have many other plants they have reason to be proud of in the extensive glass structures here. A goodly list of the very cream of *Rhododendrons* are fostered and cared for, among which we noticed half-a-dozen good plants of *Falconerii*; about the same number of *Dalhousiana*—splendid plants loaded with equally splendid flowers; the beautiful *R. Javancum*, showing its deep yellow pips among the rest; *Edgeworthii*, another noted white fragrant sort, and others too numerous to mention. Of *Camellias*, there is a long list planted out in excellent health. Of *Ferns*, a few *Todeas* are the most conspicuous in size, health, and number. The *Vines* in two or three houses are pictures of health, and promise fine fruit. Some of the *Peach-houses* also promise fair for fruit.

Amaryllis seem to be a favourite family here, and they are both select and well grown. There are at this time about two dozen sorts in bloom, some of them scented, others exceedingly fine in quality of bloom.

A. K.

[The specimen referred to was magnificent, and is truthfully described by our correspondent; but at present we will not undertake to settle the dispute. —ED.]

GREENHOUSE NOTES.

AZALEAS.

It is unnecessary on my part to make any preliminary remarks regarding the Azalea in general; but it may not be out of place at the close of the flowering season to send you a few notes, from observations connected with their culture, and which, moreover, may prove useful to some of the readers of the 'Gardener.' If, after flowering, any of the plants present a stunted or exhausted appearance, they should be taken from the pots and the old soil shaken partially away from the roots; a sufficient quantity of turfy fibrous peat which has been previously well turned and sweetened by the atmosphere, should in the mean time be in readiness, to which add a good dash of silver sand. Some recommend a portion of decayed manure among the soil, but if the plants are in an ordinary state of vigour, I prefer to avoid it, as a firmer growth is more certain—a point, by the way, upon which free flowering the following season to a great extent depends. If they will conveniently contain the roots of the plants, no larger pots than those which they previously occupied should be used, having them thoroughly cleaned outside and inside. Some plants here have occupied the same pots, 10 and 12 inch size, for four or more years; and as they still betoken high vigour, I have resolved to simply top-dress them, by removing 2 inches of the surface, and replacing with soil as above mentioned, as difficulty is sometimes experienced in securing well-ripened points, which might be increased by repotting vigorous plants. In the case of those which are to be potted, be careful that the pots are efficiently drained, as stagnant water is highly objectionable at the roots of any plant, and notably of the Azalea. A few pieces of charcoal may advantageously be placed over the crocks. In potting, the soil should be packed firmly about the roots, which should be disentangled from the part of the ball left; fill the pot to within one inch of the rim, which space should be reserved, in order that watering when required may be efficiently done. If when potting the soil was in proper order, water, with the exception of dewing overhead, will not be necessary for a day or two, applying it cautiously till free growth commences, when an abundant supply should be given, gradually diminishing it as the young shoots harden.

It is beneficial, in fact necessary, that the Azalea during the period of making and maturing its growth, should be placed in a close moist structure, where there is a little fire-heat. I place them in a division of a Melon-pit, from which they can be removed in time to plant a late crop if required. While there, they are regularly turned round and syringed to keep thrips at bay, that inveterate Azalea pest. I am glad to say, however, I have never observed the slightest appearance of

them here. The plants are much benefited by exposure to the open air one month at least before placing them in winter quarters. If the weather at the beginning of September is stormy or very wet, the plants should be removed to the greenhouse, previously washing the pots, and attending to what tying is required. The points of management during the winter months are, to protect from sharp currents of air, and to be specially careful in watering, applying it only when actually necessary, till the flower-buds develop, when it may be applied liberally. The following varieties have flowered equally well here this spring, viz.: Perfection, Duc de Nassau, Louis Napoleon, the Bride, Standard of Flanders, Marie, Gem, Cupid, Beauté de l'Europe, Stanleyana, Criterion, Roi de Leopold.

Tea-Roses.—These need only to be mentioned as being eminently adapted for the decoration of the greenhouse. For pot-culture they are invaluable, and being comparatively easy of cultivation, claim a place in the most unpretending establishment. With us the first blooms opened early in March, from Gloire de Dijon, a strong-growing, free-flowering, and now well-known variety by every one, and we have had a succession from plants of other varieties ever since. Those that have flowered early should be cut back a little and repotted in rich fibry loam, and placed out of doors in a sheltered position well supplied with water both at the roots and overhead. Special care is necessary to keep down green-fly, which otherwise would do much injury; checks from drought will induce it as fast as anything. A good plan is to mulch the surface with rotten cow-dung. They should be taken indoors before damp weather in autumn sets in. Little or no water is required during the winter months, unless in the case of forcing, which was ably referred to on a previous occasion in your pages. D. M.

ISLAY, 13th May.



PTERIS SERRULATA.

THOSE who have to keep up a supply of plants for house decoration, will find this *Pteris* a most useful plant. It is noways particular as to soil, so long as it is sufficiently open, though a compost of fibrous peat and loam, with a dash of silver sand added, will be found the most satisfactory. I prefer 5-inch pots to larger ones, the plants are so much more graceful grown in this size, and fit better into vases. It is well to keep growing on a few seedlings in a nice growing temperature to keep the supply fresh in appearance; a minimum of 50° to 55° is suitable, and, shaded slightly, the fronds come longer. As the plants get too large for house-work, they may be used to give variety to the conservatory. I mean to try how a few will do in baskets.

P. S. Cristata, and the other variety, Applebyana, are both fine for vases. The same treatment suits them as the normal type. They also produce seed quite freely, which may either be sown in pots or left to chance to germinate where they can find a suitable place. I find they come up like weeds, without any attention whatever. Scale is rather a troublesome visitor sometimes ; it is of no use to clean those fronds which may be badly infested, as with the utmost care they get materially damaged. It is better to take off such fronds entirely, and keep a sharp look-out for any stragglers left.

R. P. B.

CELERY IN POTS.

It may be a new method to some growers to adopt this plan, but it is certain that Celery has been grown in pots for many years, probably before "Under-Gardener" or myself was born—but not for late supplies, however ; and the reason I would assign for this is, the great quantity of water Celery requires, and how ready the crop is to "bolt" when its roots are confined. If "Under-Gardener" could now look in upon some growers for exhibition he might see Celery in pots far advanced in growth, and probably in good condition by the month of June ; and perhaps at the same places may now be found good Celery behind a wall or fence which has stood the winter, and comes in as a succession to crops which came into use in August.

I have never had any difficulty in keeping Celery in good condition, with little or no loss, as late as May, and that in a very exposed district in Scotland. Celery is not easily injured, except when "coddled" in absence of frost, and when grown on undrained land, planted deep and earthed up too high. In some districts "potting" might be advisable, but deliver me from the watering of a supply of Celery, say from 2000 and upwards. Space for pots in small places is generally less at command than ridges made to hold from four to seven rows of Celery. When this crop is managed, as market-gardeners often grow it, planted on the surface-level, after plenty of manure has been dug in the ground, "rotting" or "bolting" is seldom seen.

BLENHEIM.

M. TEMPLE.

HARDY ORCHIDS.

A FEW years ago I received a quantity of plants from Italy, chiefly composed of varieties of Orchis and Ophrys. They—*i.e.*, the Orchidaceæ—were all lifted during the period of growth, many while in flower. They were potted at once in a mixture of equal parts light loam and sand, and set in a cold frame, where they were allowed to

remain all the winter, very little water being given them, and only protected by a mat during frost. Well, I really thought I had seen the last of them, but early the next spring the majority of them began to make their appearance; water was administered rather more freely, and in May and June a large number of them flowered. When the bloom was over, and they had gone to rest, they were repotted in the same compost as before, and treated in precisely the same manner as the winter and spring preceding, with the same result. There are in flower at present, *Ophrys fusca*, *Orchis provincialis*, *Ophrys obliensis*, and others. I have noticed that those which were put at the side of the pot succeed much better than those put in the middle. If any of your many correspondents could give me any information respecting the culture of this interesting class of plants, I should be very much obliged.

G. G.

HAFODUNOS, NORTH WALES.

LAMBTON CASTLE PINE-APPLE.

WE have lately—the first week of May—had an opportunity of testing the quality as to flavour of this splendid-looking Pine-apple. The fruit in question started in winter, and stood for a long time in a temperature of 60°, with a batch of Pines at rest. It was not by any means a large fruit for this variety, having been borne on a plant that started prematurely; still it measured 10 inches high, and 6 inches in diameter. We unhesitatingly pronounce the flavour to be first-rate, second only to a Queen or Black Jamaica, but certainly superior to Cayennes, Charlotte Rothschild, or any other large Pine that we are acquainted with. We trust Mr Hunter will soon be able to submit this grand Pine to some more public tribunal, for we will be disappointed if it does not take front-rank place among Pines, in appearance, fruitfulness, and quality.

VISIT TO JAPAN.—GARDEN CULTURE.

TO THE EDITOR OF THE 'YORKSHIRE GAZETTE.'

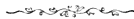
TOKIO, Nov. 1, 1872.

SIR,—In one of my previous letters I gave a short notice on agriculture; and now, with the kind assistance of a horticultural friend, I send you a letter on garden culture and fruit and forest trees, which I hope will be interesting to some of your readers. The soil of Japan is well adapted to gardening, being generally rich and loamy in its nature, and of a great depth. Trees, therefore, grow to great perfection, and are very cheap. In the garden in front of my own bungalow I have three dozen *Camellia* trees, in addition to *Firs* and *Palms*. The former only cost me 1s. 8d. a dozen, and they are now in flower, and will remain so throughout the winter, as they appear to be very hardy, and the frost does not kill them.

I will commence with fruits. Pears are grown here to great perfection; and the Japanese are wonderful in the art of grafting trees. They spread them out flat on bamboos after they have grown to about three feet in the shoot, and as you walk through the orchards, the Pears, &c., are within reach above your head. Plums, Oranges, and Grapes, are in great quantities, and of a very rich flavour. Peaches, Chestnuts, Loquats, Salisburia nuts, and Diospyros Kaki, are the most common fruit-trees of the country. The winter vegetables are Carrots, Onions of several kinds, "Lobbo," a kind of Radish, "Gobbo" (*Arctium gobbo*), Nelumbium roots, Lily roots, Turnips, Ginger, *Scirpus tuberosus*, *Arum esculentum*, and Yams. Some of the forest-trees are of great size, the largest being the *Pinus Massoniana*, *P. densiflora*, *Abies firma*, *Retinospora pisifera*, *R. obtusa*, *Cryptomeria japonica*. The latter grows to an immense size, and seems to reach the greatest perfection. There is also the *Thuopsis dolabrata* and *Sciadopitys verticillata*. The Maiden-hair tree (*Salisburia adiantifolia*) is very common, and is generally found in great numbers at all the temples, and attains a great size. The Japanese eat the fruit from it, which is called "Gingko." The evergreen Oaks, in great variety, are very common, and attain a goodly size, and are most ornamental trees. Chestnuts of several kinds are also common: the leaves of one species (*Castania japonica*) are used to feed silk-worms. Maples are also common trees; many of the leaves are beautifully marked with various colours, and almost all of them take on deep colours as they ripen in the autumn, and produce a most beautiful and striking appearance upon the landscape. The Elm (*Ulmus Keaki*) is, however, the most valuable timber-tree in Japan, reaching as it does immense proportions. It has been now introduced into Europe. Amongst shrubs the *Weigela* is common, is covered with flowers in the summer months, and is really ornamental in a garden. I have a beautiful specimen in mine. The *Osmanthus aquifolius*, which is covered with a sweet-scented white flower, is also very pretty. My friend informs me it belongs to the *Oleaceæ* (Olive tribe), and is a fine evergreen shrub. The variegated Holly is very plentiful, and makes a pretty contrast with other shrubs. The suburbs of Tokia are remarkable for the number of their gardens, the most extensive of which are situated at Ogee, Dang-o-zaka Ogee, and Su-mae-yah. At the latter place the entire country is covered with gardens; and one straight road, more than a mile in length, is lined on both sides with them. Each nursery covers three or four acres of land. They are nicely kept, and contain thousands of plants, both in pots and in the open ground. In another letter I will give you a description of one of them, and an article on dwarfing, &c.—Yours, &c.,

J. TASKER FOSTER.

[The Editor of the 'Yorkshire Gazette' has kindly forwarded us proofs of several communications received from his son, who is Telegraph Engineer to the Emperor of Japan. The above is one of the letters.—Ed.]



SPECIAL FRUIT PRIZES.

Messrs James Veitch & Sons offer the following liberal prizes to be competed for at the Royal Horticultural Society's Gardens, at Kensington, on the date of their grand Rose show, July 2, 1873.

For the best collection of fruit in ten distinct kinds

(In this class only one variety of Pine, Melon, or Strawberry will be admitted; but Black and White Grapes, Black and White Cherries, and Black and Yellow Plums, will be considered distinct.)

1st Prize.	2d Prize.	3d Prize.
£20	£15	£10

	1st Prize.	2d Prize.	3d Prize.
For the best dish of White Grapes, consisting of three bunches of one or more kinds	£6	£4	£2
For the best dish of Black Grapes, consisting of three bunches of one or more kinds	£6	£4	£2
For the best three Pine-Apples	£6	£4	£2
For the best six fruit of Peach, one kind	£5	£2, 10s.	£1
For the best six fruit of Nectarine, one kind	£5	£2, 10s.	£1

The competition for these prizes is limited to the *bonâ fide* gardeners of Great Britain.

All entries to be made as usual to Mr G. Eyles, at the Royal Horticultural Gardens, South Kensington.

In all cases the decision of the judges to be final.

These prizes are quite distinct from the "Veitch Memorial" prizes.

REVIEWS.

A GENERAL SYSTEM OF BOTANY, DESCRIPTIVE AND ANALYTICAL—In Two Parts. Part I.—Outline of Organography, Anatomy, and Physiology. Part II.—Descriptions and Illustrations of the Orders. By Emm Le Maout and J. Decaisne. With 5500 figures, by Sternheil and A. Riocreux. Translated from the original French, by Mrs Hooker. The Orders arranged after the methods followed in the Universities and Schools of Great Britain, its Colonies, America, and India. With Additions, an Appendix on the Natural Method, and a Synopsis of the Orders. By J. D. Hooker, C.B., &c., Director of the Royal Botanic Gardens, Kew.

This magnificent volume cannot be over-praised. It is altogether, in its design and execution, a botanical work of the highest order, and one which must be indispensable to every student of descriptive and analytical botany. The outline of organography, anatomy, and physiology is a reproduction of the 'Atlas Elementaire de la Botanique,' edited some years ago by one of the authors, and favourably received by scientific botanists. This, however, was comparatively brief, and devoted to European orders. In the present work nearly all exotic orders have been added; and consequently it illustrates all the types known of the vegetable kingdom, with detailed descriptions of their uses and affinities. From this it will be seen that it must be a most valuable work to students of botany. The classification of the orders commences with the most highly organised, and concludes with the families of the lowest organisation. The illustrative analyses are founded, we are told, on materials accumulated during upwards of thirty years. The series of engravings with which the work is illustrated is wonderfully rich, and truthfully and beautifully executed. Taken as a whole, this is a work of great value, and one which can scarcely be too highly recommended. Though it extends to over 1000 pages, it is yet of convenient size; and paper, printing, engraving, and binding are worthy of so splendid a work.

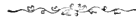
SCOTT'S ORCHARDIST, OR CATALOGUE OF FRUITS. Second Edition.

This is an immense descriptive catalogue of fruits cultivated by the author at Merriot Nurseries. It gives the synonyms and origin of each variety so far as known. The cultivation of each fruit is practically described. The subject of forcing orchards is also intelligently treated of, and select lists for different localities are given. If this work proves anything, it proves that there are far too

many mere varieties in cultivation, and that what the inexperienced require more than anything is not "fat catalogues," but reliable selections for different localities. The 'Orchardist' contains much useful information to all who are interested in fruit-culture; and the remarks are interspersed with a considerable amount of facetious remarks and bantering argument in reference to some of the hobbies of his contemporaries, which might have been as well left out.

SELECT FERNS AND LYCOPODS. With numerous Illustrations. By Benjamin S. Williams. Second edition.

We are happy to see a second edition of this very useful manual. What Mr Williams has so thoroughly well done for Orchids and stove and greenhouse plants, he has in this volume done for Ferns and Lycopods, and no lover of these beautiful plants should be without this excellent manual.



TEMPERATURE at DRUMLANRIG from May 1 to May 20.

	Min.	Max.		Min.	Max.
May 1, . . .	44°	56°	May 11, . . .	43°	60°
" 2, . . .	44	55	" 12, . . .	47	59
" 3, . . .	44	54	" 13, . . .	29	58
" 4, . . .	28	51	" 14, . . .	28	58
" 5, . . .	38	45	" 15, . . .	40	50
" 6, . . .	37	51	" 16, . . .	37	45
" 7, . . .	31	49	" 17, . . .	36	44
" 8, . . .	32	56	" 18, . . .	36	47
" 9, . . .	40	51	" 19, . . .	27	52
" 10, . . .	37	57	" 20, . . .	27	50

Hills covered
with snow.

Rainfall, 1 inch.

It will be seen from these figures that the temperature for the first three weeks of May, has been unusually low. The wind has been nearly constantly from the E. and N.E., and vegetation has made little or no progress. Although the temperature has on certain dates fallen lower than is indicated above, the mean temperature of May has not been so low for a good many years.



Calendar.

KITCHEN-GARDEN.

THE vegetable garden will now be assuming a furnished appearance, and while crops are growing vigorously, weeds will at the same time be making a struggle for their development, and if they are to be successfully kept down, they must be attacked with the hoe while in their early stage of growth. The showery weather (while we write) has made the ground so saturated, that hand-weeding is the only means of keeping crops clear of weeds. Seeding should be prevented if possible, as it tends greatly to increase the work for years to come; while the hoe is destroying weeds, it

is doing much to promote free growth in the vegetable crops. The pronged hoe and steel fork may also be used with great advantage. Good soakings of water may be necessary if weather should be dry; mulchings for Peas, Beans, &c., are of much service, especially on light soils. After the surface dries sufficiently, the hoe should be used to prevent cracking; the loose soil acts as a mulching. Cold dribblings of water are an evil which cannot be too strongly denounced. Proceed with the planting of all the Brassica tribe of plants as they become large enough. Plants drawn up before they

are planted seldom do well. Sturdy vigorous plants are always to be preferred. Crowding of winter crops cannot be reasonably expected to give good returns. Frost and damp are sure to make great havoc if the winter should be severe. Draw neat drills for the plants; when planting is done the soil should be pressed gently to the roots instead of wedging in the collars only. We find this practice is still common with the non-experienced. Keep each kind of crops by itself as much as possible, so that good breadths can be trenched, or dug up when the crop is taken off. Avoid the too common system of cutting up the ground with paths across plots, which (though a very old system), wastes ground for no purpose. Dustings of lime and small coal-ashes may be required to keep slugs and grubs in check. Puddling the roots with cow-manure, soot, and soil well mixed, does much to keep vermin off, and helps the plants to withstand drought. Manure-water may now help Cauliflower to finish off fine heads. Walcheren Broccoli may be sown for a late supply. Granger's early Broccoli may be sown for a chance late crop. Sow Peas twice in the month; an early kind for last sowing may be most suitable. Sow crops of French Beans, Scarlet Runners, and Broad Beans. Top the latter when they come into flower. Stake Peas and Runners as soon as they are 4 to 6 inches above ground. These may be advantageously grown by keeping them dwarf, topping back the runners.

Sow and plant full crops of Lettuces in shady positions and on Celery ridges: tie up Lettuce to blanch if necessary. Sow Endive in small portions, as the plants often run to seed, till later in the season. Sow full crops of Turnips, Coleworts, Radishes, Spinach, small Salad of every kind. Plant out Pars-

ley, and sow a good breadth to stand the winter. The leaves are much finer when the plants are left about 8 inches or more apart; edgings to other crops may be formed with Parsley to economise space. All crops must be thinned as they require it; when left to become crowded they are much injured. Dustings of soot and a little guano among Onions in showery weather will do much to help them. Tomatoes may now be planted out in open spaces on walls; a little mulching may be given, and abundance of water when necessary. When crops are heavy the plants may be greatly benefited by good soakings of manure-water. In districts where they do well without the aid of a wall, &c., stakes must be given and stopping had recourse to. All useless laterals must be taken off. Prepare a ridge for Cucumbers and Ghirkins; a little litter mixed with mowings of grass and leaves answer well. First throw the soil right and left, making a bed of four feet or more, place the manure in the space and return the soil; a portion of good stuff may be given to start the plants into free growth. Vegetable marrows may require similar treatment. They are the better of hand-lights or plant-protectors placed over them, to give them a start into free growth. Where Chillies and Capsicums are of good size, they may be planted in a favourable position under a wall, but glass protection brings them on more safely. Asparagus lately planted may be helped by manure-water; sprinklings of salt will help bearing beds, and destroy weeds. Seakale may be benefited by application of salt. Get all ridges manured ready for Celery without delay. Plant out Cardoons when they are fit. They may be treated like Celery, with plenty of manure and water. M. T.

FORCING DEPARTMENT.

Pines. — Succession plants that were shifted into their fruiting-pots in March will now be growing rapidly. Great care is now necessary in watering and regulating the ventilation of these, so as to produce a growth that shall not be stunted on the one hand, nor too succulent on the other. The soil should just be kept as steadily moist, but not wet, as possible, and the same rule applies to the moisture in the air. As soon as ever the thermometer rises to

about 80° in the morning with sun-heat, let air be admitted, and increase it by degrees till noon, when in steady warm weather there should be a free circulation of air about the plants, but always in conjunction with sprinklings of water about the paths, &c. It should be gradually reduced in the afternoons, shutting up with a sun-heat of 85°, allowing it to decline to 70° through the night. Avoid the yet too common practice of heavy syringings overhead,

but dew the plants gently with a fine rose syringe at shutting-up time. In the southern parts of the kingdom fire-heat may be nearly entirely dispensed with after the longest day, if the weather be warm and summer-like, and everywhere its use should now be at its minimum. Sun-heat should be made the most of by shutting up early, merely applying fire enough to prevent the temperature from sinking below 70° towards morning. Where the bottom-heat is supplied from tan and leaves, see that it is not allowed to shrink from the side of the pots, exposing them to a circulation of air, which renders more frequent watering necessary. Unless during excessively bright sun do not shade these growing plants. We would rather have the leaves of a slightly brown tinge from exposure to bright sun, than have them green and too succulent from overshadowing. Most of those that started into fruit early in spring will be ripe this month. Gradually decrease the moisture in the soil and air as soon as they begin to colour generally; but avoid by all means a starving-into-ripeness process, especially should bright sunshine prevail, but give as much water as will keep the functions of the plant healthy and active till the fruit is half coloured, when no more should be given. A more liberal admission of air is conducive to high flavour. When more fruit are ripe at any given time than are required, they can be stored away on the plants in a cool fruit-room, where they will keep a long time: when kept in this way the suckers should previously be taken off and potted. That portion of the stock intended for supplying ripe fruit in autumn should start this month, and if growing in light houses or pits, and they have been rested in May, as formerly directed, there should not be much difficulty in starting them if subjected to increased temperature and moisture now. Those intended for starting in July should now be kept cooler and drier for a time, but avoid starving them, so as to cause their leaves to shrink. Give to all fruit that are swelling off a high temperature and moist atmosphere, and a steady supply of water at the root. Where young suckers are forming reduce them to two on each plant.

Vines.—Late crops will be undergoing the thinning process this month. These should be thinned more severely

than crops that are intended to be cut before November. As much of their successful keeping depends on a circulation of air about the individual berries, see an article by J. M. in our last issue on this subject. The operation of thinning free-setting sorts is too often delayed till the berries are too large to perform the operation with that ease and speed with which it can be done when thinning commences earlier. More air may now be admitted to Vines in all stages, but in bright weather let it be accompanied with frequent sprinkling of the borders. Shut up early with sun-heat, so that the least possible amount of fire-heat be required; but leave a chink of air on all night. Where crops are swelling off let the night temperature at the coldest part of the morning range about 70°, and to maintain this heat little fire will now be necessary in ordinary weather. Examine the borders of all Vines that are in active growth, and see that the inside borders do not become over dry. Give established Vines in full bearing a soaking of manure-water, and afterwards mulch with manure or half-decayed leaves. The same directions apply to outside borders in time of drought. Keep those houses where grapes are quite ripe cool by leaving air on all night, and do not allow these, or Vines from which the Grapes have already been cut, to make fresh lateral growths, but remove at once every attempt at such, and keep them cool—and, if their roots are mostly in inside borders, not over wet at the root; in short, rest these in all respects. Crops in the process of colouring should have increased air both at front and top lights; do not, however, withdraw moisture suddenly, but do it by degrees between the time that colouring begins and is completed. Immediately the first signs of colouring commence examine the borders, and if dry give a good watering; and if not already done, mulch as has been directed already. A few thorough soakings of water are much to be preferred to more frequent driblets, which do more harm than good. Keep Vines from which the crop is all cut as cool as possible, and syringe the foliage occasionally to keep it clean and free from the attacks of red-spider. Wherever this enemy appears on a Vine from which the Grapes have not been cut, attack it at once with a sponge and clean water; an

active man can soon go over a great amount of foliage in this the most effectual of all ways of getting rid of it. Where the water is pure and free from deposit there is no objection to syringing; as compared to the ravages of red-spider, it is by far the lesser of two evils. Pot-Vines shifted into their fruiting-pots last month will now be growing rapidly. When they reach to 6 or 7 feet stop them, and do not permit much more lateral growth, or the first buds will be deficient; expose these to as much light as possible, and ventilate them freely. Encourage young permanent Vines planted this season to make as much wood and foliage as there is room for without crowding.

Peaches.—Where the early crops are all gathered, give inside borders, if dry, a good soaking of water, and keep the house as cool as it can be kept by freely airing it; look over the trees, and cut out all shoots that are not required for next season. Then give the trees a good washing with the engine, and repeat it three times weekly to prevent red-spider, and keep the foliage otherwise healthy. In houses where the fruit are ripe and ripening, keep them dry and freely aired. Wherever any of the fruit are shaded by the leaves, push them aside so that the sun can act upon the fruit, and colour and ripen them properly. When the fruit are stoned and swelling off, let both the air and borders be kept regularly moist, using manure-water in the case of established trees that are in full bearing and not making gross growths. Syringe every fine afternoon; shut up early with sun-heat, and do not let the temperature fall below 65° for the night. See that green-fly does not get a footing in late houses, and tie in the growths, and thin the fruit and wood sufficiently in time, if either are yet too thick. It is a mistake to tax the energies of the tree by allowing a crowd of fruit to get to a large size, and then to thin. See to young trees that have been planted this or last season. Push back shoots that are stronger than the rest, so as to properly balance the growth all over the trees. Avoid crowding in their case also.

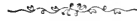
Figs.—To insure high flavour, keep those that have arrived at the ripening point dry and exposed to a circulation of air. As soon as the first crop is all

gathered, water copiously, and mulch with manure all free-bearing trees, to encourage the second crop now advancing. Syringe freely every fine afternoon, and shut up with sun-heat to run the thermometer up to from 80° to 85°. When growing and swelling off a crop, figs delight in an abundant supply of moisture and a high temperature. Where the fruit are thick, thin off some of them; a lesser number of fine large fruit is preferable to a larger number of smaller ones. Those bearing heavily in pots require to be liberally fed with manure-water and rich top-dressing, and an abundant supply of moisture. This treatment requires to be modified in the case of younger and less free-fruited trees.

Melons.—Now that there is more natural warmth, and more air is required, pay careful attention to crops in Melon-houses where the bottom-heat is derived from hot-water pipes. More water is required under such circumstances than in the case of dung-beds. It is a good plan to mulch the surface of the soil with rotten manure to prevent evaporation, and consequently frequent waterings. When water is necessary, give sufficient to moisten the soil in preference to more frequent and less effectual waterings. Fruit that are ripening should be kept rather dry and well aired, and exposed to the sun, to bring up the flavour; but, on the other hand, avoid starving the fruit into ripeness. Sprinkle advancing crops on fine afternoons. Impregnate, stop, and regulate advancing crops. Now is a good time to plant for August supply, and to sow for later crops. Use a stronger soil, and use more rotten manure for the heat-of-summer crops than for earlier and late crops.

Cucumbers.—A quantity, according to the demand, may now be planted out in the southern part of the kingdom in cold frames where flower-garden plants have been stored. A foot of half-rotten manure or leaves, or both, mixed together, being placed in the bottom, with 8 inches of rich soil, is all the preparation necessary to their bearing freely till the middle or end of September. More artificial warmth is needed for Scotland. Top-dress the beds of those that have been bearing heavily for some time, and water with manure-water. Syringe occasionally with clean soot-water to keep spider and thrips in check.

Strawberries in Pots.—Any portion of these yet to ripen will now do best in cold pits where there is nothing but sun-heat. Plant out all those from which the fruit are gathered for next year's bearing outdoors. As soon as ever runners can be had for laying for next year's forcing, let the operation be proceeded with. For early forcing we always liked to see them in their fruit-ing-pots the first week of July. Either lay them in 3-inch pots at once, or in a layer of rich soil laid between the rows, where such is convenient. Those intended for early forcing should not be put into such large pots as those intended for successional or later supplies; and the soil for the earliest should be a degree lighter than in the case of the later crops.



Notices to Correspondents.

H. A.—Sow the Peas you name at once. They should be sown about the middle of May to come in by the 1st of September in ordinary seasons. We are rather at a loss to know how to answer your other question, because you do not state whether the collections are required for spring or late in summer. Presuming that it is about the month of August, we should say for six—Peas, French Beans, Cauliflower, Potatoes, Carrots, Onions; for ten, add to these Vegetable Marrow, Celery, Spinach, and Turnips. These are all first-class vegetables, and the most generally useful.

T. P.—Six excellent winter-blooming Orchids are *Cælogyne cristata*, *Calanthe Veitchii*, *Dendrobium nobile*, *Lycaste Skinnerii*, *Phajus grandiflorus*, *Cypripedium insignis*. These are all well adapted for your purpose, and are very easily cultivated. You should possess yourself of Williams's Orchid Manual.

A. M.—Bowood and Tynninghame Muscats will do quite well at the warm end of your vinery. Next to the Duke of Buccleuch, Buckland's Sweetwater is the best early.

N. D.—Plant out your Clematis without delay. If your ground is shallow and poor, excavate it to the depth of two feet, and make up with two-thirds loam or good ordinary garden soil and a third of well-rotten manure. The beauty of these fine varieties depends much on liberal culture and close pruning annually.

CONSTANT READER.—The wet sunless summer of last year is doubtless the cause of your comparative failure. Push them on with a high temperature in the afternoon and evening, and air liberally by day. Let the moisture be moderately supplied, and do not let the growths ramble too much, which they will be disposed to do, the crop being so light. If well ripened this season, you will be certain, all other things being equal, to have a good crop next year. In such a house as yours, with the Vines rather crowded, it was next to impossible to ripen late Vines last year.

R. W.—Both the firms you first name manufacture first-rate Mowers. We do not recommend tradesmen. We have not had experience of the third, but it is highly spoken of too.

SUBSCRIBER.—*Areca Verschaffeltii*, *Areca lutescens*, *Cocos Weddelliana*, *Dæmonorops melanochætes*, *Geonoma Schottiana*, *Seaforthia elegans*, are all excellent for table decoration.

B. M.—You are quite right, but we do not intend to say more just now. Bricklayers' labourers get far better pay, and do not even require to produce a character. Indeed, the order of matters just now is, that men who require, as the foremost indispensable, a high character for morality and trustworthiness, get the very worst pay going; and conspicuous among them are, we are sorry to say, gardeners.

D. M.—*Tetralthea ericoides*: *Calceolarias* so smashed that an opinion cannot be formed.

J. CRAIG.—We never heard of the Sphagnum being infested with mealy bug on the moors before. Are you sure it is mealy bug?

A CONSTANT READER.—Inasmuch as the Carnation you name is not hardy, it must be considered a soft-wooded greenhouse plant.

THE GARDENER.

JULY 1873.



SITES AND ASPECTS OF GARDENS.



CONSIDERING that the success of garden culture so very much depends on soil and position, the choice of a site on which to make a garden is of the very first importance. The quality and supply of fruits and vegetables, as well as the amount of satisfaction and pleasure derivable from all that is connected with a garden, continue in most cases to be either injuriously or favourably affected for generations by the want or the application of forethought in connection with the recognition of natural laws in coming to a decision as to where, on any given domain or property, the garden should be placed. Yet it is a notorious fact that some of the greatest and most prominent garden establishments in the kingdom have been constructed on the very worst sites that could possibly be selected on the estates to which they belong. Indeed, so much is this the case, that had those who made choice of such sites been ruled by something like—shall we say—the perverse idea of providing the gardener with the worst soils and climate that a locality can offer, and therefore of necessity with as many natural difficulties to combat as possible, they could not have been more successful. To illustrate the force of this statement, it is only necessary to instance a few places, where it might have been expected that a thorough knowledge and recognition of how very much depends on whether one of two sites not many hundred yards apart should be chosen, and where, notwithstanding, the greatest possible blunders have been glaringly committed. Look, for instance, at Chatsworth kitchen-

gardens and forcing-houses. They are set down on a site little better than a swamp, barely above the level of the Derwent river, in the lowest part of what may be termed a basin, where late and early frosts and dismal fogs prevail, and play sad havoc with tender crops outdoors, and where, in the forcing-house, the stoker has to contend with the coldest air of the district. The uplands around this site might have afforded superior positions in every respect. Another instance is that of Drumlanrig Gardens, which are formed on what is the lowest spot of a vast basin. They are nearly on a level with the Nith, which, when in flood, floods the stokeholes. The soil is a heavy, cold, clayey one, lying on the cold whinstone formation. Early and late frosts are most destructive to all fruits and vegetables, and anything like a kindly growth does not commence till the longest day. And the difference between the temperature of this damp flat, and grounds immediately surrounding it on higher and drier levels, is very marked. This state of things has been arranged while plenty of good sites could have been chosen higher and warmer, with more genial and workable soils, and on the warm red sandstone formation, where tender things flourish long after they are cut down on the flat cold land by the river-side. Then, again, there are the Horticultural Gardens at Chiswick, placed in one of the worst sites for biting frosts and raw fogs that the valley of the Thames affords. We might go on to enumerate other garden establishments, which, with something like the most perverse blundering, have been placed on the most unfortunate and undesirable sites, where the result invariably is, that, from the prevalence of frosts and damp air, Potatoes and other tender things are often cut down two or three times in May, while those in the gardens of the cottage not very far removed, but in more elevated positions, escape. Fruit-blossom of course shares the same fate, and such things as French Beans are cut down in early autumn, when just coming to their best, but on the high and dry hillside continue their yield until October.

It may safely be said, from the experience of many generations, that the lowest part of an estate, however small, should never be selected for the site of a garden, and that the higher positions should be chosen, unless some very serious reasons can be urged against such an arrangement. It is scarcely necessary to point out the chief reasons for preferring the higher to the lowest site that is at command for the formation of a garden. It is well known that the cold air rolls down into the valleys, and that fogs envelop vegetation most frequently there; and that is enough to account for the damage which vegetables and fruits sustain in valleys, while the uplands escape. It has also occurred to us of late, that the propriety of enclosing a garden with walls so

that it shall have an aspect due south is open to question. It is a well-known fact that late springs are more generally followed by heavy crops of fruits than are very early ones, and for the simple reason that the blossom, being later, escapes the late spring frosts; and also that fruit-trees that are not so early exposed to the morning sun, on that account are not so susceptible of injury from frosts. These two circumstances would suggest that the aspect of walled gardens should be south-west, instead of due south. This would prevent so early an exposure to sun after frost in the case of the greater portion of the walls at least. Moreover, they would get the full sun for a longer time in the after-part of the day, and more especially in late summer and autumn, when sun is most required to ripen the fruit and mature the wood for another year's crop. It is certainly of importance that trees that cannot be thoroughly protected should not be too forward in early spring, should not be exposed early to full sun after a pinching frost, and that they should be well ripened in autumn; and the aspect most likely to assist in this must be of great consequence, and a subject worthy of discussion.



NEW ORCHIDS IN FLOWER.

BEAUTIFUL as the Orchids in our collections undoubtedly are, we are continually meeting with or receiving fresh introductions that eclipse them in beauty and novelty. In this paper we propose to notice two or three of the most effective Orchids that have flowered this season.

Ærides crassifolium.—This is a free-growing and robust species, of dwarf habit, and has just flowered with F. B. Dodgeson, Esq., Blackburn, an enthusiastic collector of orchidaceous plants. It was first exhibited at the show of the Blackburn Horticultural Society, May 28th of the present year. It is one of Messrs Law's introductions, and has been greatly admired by all Orchid fanciers who have had an opportunity of seeing it. Its leaves are from 5 to 9 inches long, and are of great substance, the youngest being slightly tinged with brown, and dotted with purplish brown at the base. The flower-spike is slender and pendulous, bearing in the specimen alluded to twenty fine flowers, similar in form to those of *A. (falcatum) Larpentæ*, but larger, and of a much deeper colour. The sepals, petals, and middle lobe of the lips are of a deep, rich, amethyst-purple tint, shading into white at the base of the segments. The lateral lobes of the lip are of a pale lilac, mottled with rosy purple. The flower-spike is about 14 to 16

inches long, and the flowers themselves are most deliciously perfumed. It is at present rare in collections.

Odontoglossum vexillarium.—This is perhaps the most superb plant in the genus to which it belongs, which is saying a great deal; but when seen staged side by side with *O. Alexandræ*, *O. Pescatorei*, and the other acknowledged beauties of the group, they all pale before this magnificent species. It is one of Messrs Veitch & Son's introductions, by whom it was first flowered. Its pseudo-bulbs are from 3 to 4 inches long, flat, and rather pale in colour, bearing one or two oblong-lanceolate leaves of a pale glaucous-green tint. The bulbs are also furnished with two or three basilar leaves on each side, from which the sub-erect flower-spikes emerge. Messrs Veitch & Son exhibited a superb little specimen at the Horticultural Exhibition at South Kensington, June 24, which bore two spikes of six blossoms each, being the finest plant yet exhibited. The flowers are large and of good substance, being nearly 3 inches across. Sepals and petals of a delicate rose colour. Lip broadly flabellate, of a bright rosy tint, the base being of a lemon-yellow colour. Some varieties are marked with radiate lines of purple on the lip, and the size and shape of the blossoms also vary in different individuals. This superb plant undoubtedly has a great future before it, and it is difficult to foresee the ultimate perfection to which it may be grown. It succeeds well treated like its congeners, grown in a small pot and suspended near the light; and like them, it grows freely and requires an abundant supply of moisture.

O. Insleayi (*var. Leopardinum*).—This is a very fine and richly coloured form of *O. Insleayi*, introduced to our collections by Messrs James Backhouse & Son of York. In habit, it is nearly identical with *O. Insleayi*, but its large massive flowers are far superior in point of colouring. The sepals and petals are of a pale green colour, heavily barred and blotched with rich shining brown, while the bright golden lip is superbly blotched with rich velvety crimson. I saw this noble plant growing freely, in the new Mexican house of Messrs James Backhouse & Son at York, a short time ago, and it was by them exhibited the other day at South Kensington in fine condition, bearing five flower-spikes, and nearly twenty flowers. This will undoubtedly prove an effective plant when it gets thoroughly established.

We have a few more new and rare Orchids to notice, but must defer them until our next paper.

F. W. B.

NOTES ON HARDY CONIFERS.

CHAMECYPARIS SPILEROIDEA (THE GROUND CYPRESS).

THIS fine evergreen tree, the "White Cedar" of the Americans, and the only species of the genus of undoubted hardiness in our climate, is perhaps still best known in collections under its original, and certainly most expressive, name, "Cupressus Thyoides," or Thuja-like Cypress. It is a native of Canada and the United States, where, particularly in the maritime districts, it has a wide distribution, covering vast tracts of low swampy land, and growing with a straight tapering trunk to a height of some 70 or 80 feet. The wood is light, fine-grained, and easily wrought, and is said to resist the influence of the weather better, and to be more durable for outdoor purposes, than any of the other American firs.

Though introduced into this country so long ago as 1736, and since then freely planted for pleasure-ground decoration, it has rarely, if ever, been found to grow higher than a moderate-sized shrub, and it is only as such that it can be recommended to cultivators. In congenial circumstances, however, it is exceedingly handsome, and forms a neat distinct-looking specimen, very hardy, and by no means fastidious as to soil, provided the subsoil is cool and naturally damp, and stiff rather than gritty and porous. In general appearance it resembles some of the Arborvitas or Cypresses, or rather a combination of the characters of both, those of the latter being the most prominent. The habit of growth is close, bushy, and sharply conical, the abundant branches, divided into short, twiggy, fan-shaped branchlets, densely covered with short scale-like leaves of a bright glaucous-green hue.

The following varieties which have occurred from time to time among seedlings are really distinct, and deservedly popular among collectors of fine shrubs: *Atrovirens* differs only from the species in the colour of the foliage, which, instead of being glaucous, is bright green; *Glauca* has a dwarfer and more compact habit, with a more decidedly silvery-glaucous colour, which it retains all over the year; *Variiegata* has its green branchlets freely intermixed with golden yellow, and is one of the prettiest of variegated Conifers, forming a conspicuous and exceedingly beautiful lawn specimen-plant.

SAXE-GOTHEA CONSPICUA (PRINCE ALBERT'S YEW).

This genus, which as yet is only represented by one species, was named in compliment to the late Prince Consort. It is a native of high mountain-ranges in Patagonia, from whence it was first sent to this country in 1846. In its native habitats it forms a broad bushy shrub or small tree, varying in height from 10 to 30 feet, according to

altitude and exposure; and resembles, both in style of growth and foliage, its near ally, the common or English Yew.

Although found growing naturally at heights approaching the limits of perpetual snow, it is peculiarly liable to injury from spring frosts, and can scarcely be recommended as hardy enough for planting in every locality in Britain; there are, at the same time, many places where it might be tried with a fair prospect of success; and as it is, when seen in a thriving state, a handsome and interesting plant, it deserves to be tried wherever a well-sheltered situation with a dry porous soil is available.

FITZ-ROYA PATAGONICA (THE PATAGONIAN FITZ-ROYA).

This distinct and interesting Conifer is found associated with the Saxe-Gothæa on high mountains in Patagonia, from whence it was also sent home in 1846. The genus was named by Dr Hooker in compliment to its discoverer, Captain Fitz-Roy. It is described as a graceful tree, growing in sheltered valleys to heights of from 50 to 100 feet, but dwarfing down to a mere bush as it approaches the limits of perpetual snow.

Its value as a hardy ornamental plant may be stated as similar to that of the Saxe-Gothæa; for, while it is undoubtedly very handsome where it succeeds, it requires a well-sheltered situation and a dry soil, and it is only in such that it is ever seen to advantage in this country.

PODOCARPUS (THE LONG-STALKED YEW).

In this group we have a large number of grand evergreen shrubs and trees, some of them very lofty—natives of Asia, Africa, and America, many of them producing excellent and durable timber. Though botanically distinct, they are closely allied to, and resemble both in foliage and habit of growth, the various forms of our Yews, to which tribe some of the species are sometimes, though improperly, referred. Out of some forty or fifty species and varieties known to botanists, only two or three are sufficiently hardy for outdoor cultivation in Britain, and even these for the most part require to be planted in well-sheltered localities. All the sorts thrive best in shady situations and in peaty soils, or loams rich in vegetable matter, and when well grown form distinct and interesting ornamental shrubs. The following can be recommended as among the most desirable and worthy of a trial where suitable conditions for their culture are available.

P. Andina (*the Andes Podocarpus*), also known as *P. spicata*, is a native of high mountain-ranges in South Chili, where it is described as forming a thickly-branched broadly-conical shrub or small tree, varying in height according to altitude or exposure from 10 to 25 feet.

It is here a fine ornamental shrub of a sharply-conical form, abundantly branched, with linear leaves from a half to one and a half inch long, of a rich shiny green colour.

P. Koraiana (the *Corean Podocarpus*), sometimes called "Taxus Japonica," is found wild in mountainous districts in Japan and on the Peninsula of Corea in China, growing to heights of from 10 to 20 feet, it is also frequently met with in cultivation in town gardens in both these countries as an ornamental shrub.

Though of remarkably slow growth even under the most favourable circumstances in this country, it is quite hardy, and forms a neat bushy shrub, with a habit of growth similar to the Irish Yew. The long upright branches are much divided into small branchlets, abundantly clothed with linear-shaped leaves from 1 to 2 inches long, of a bright glossy green colour above and slightly glaucous below. It is a superb plant for small gardens, and cannot be too highly recommended for geometric beds or other arrangements where neat-growing dwarf shrubs only are admissible.

P. Nubigæna (the *Nubigean Podocarpus*), is found widely distributed on mountains in the colder parts of Chili, on the Andes of Patagonia, in Valdivia, and on the island of Chiloe, and is described as a lofty and beautiful tree. It is here a very slow-growing plant, and extremely fastidious as to soil and situation; where it does succeed, however, it is very ornamental, and should be tried in all collections of select shrubs. It will only thrive in rich cool soil, and in a mild sheltered situation. The habit of growth is bushy and conical, the branches thickly covered with thick leathery leaves about 1 inch long, of a bright green colour above and with a glaucous line on each side of the mid-rib beneath.

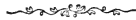
HUGH FRASER.

PLANTING OUT FORCED STRAWBERRIES FOR A MAIN CROP.

For the last nine years we have planted out our forced Strawberry plants in a systematic way, for a main crop of fruit, and have never in one instance failed in securing a most abundant crop. I am aware it is a common practice to plant out forced plants as a kind of auxiliary crop, most dependence being placed upon the permanent plantations; but where Strawberries are forced in any quantity, I would advise the planting of them out in a regular way for a supply of fruit for preserving and other purposes. Such plants bear excessively the first year, and never fail. The second year they will bear a heavy crop again, but after this they should be trenched down. Besides, the plants are soon enough if they are planted out in August. We

follow our second early Potatoes with the Strawberries, and have been as late as September in finishing, but the last-planted plants bore just as well as the first the following season. Our practice is to put the plants out in a sheltered corner as they have done bearing: if the pots are wanted, the plants are turned out and the balls packed closely together, filling up the crevices with a little fine soil, and in this way they are left till they can be planted out, not forgetting, in the mean time, to water them abundantly. If the ground has been manured heavily for the Potatoes, it is just dug over and the Strawberries planted at the same time, 18 inches apart between the plants, and 2 feet between the rows. This is ample, for forced plants do not make such growth as permanent ones: neither do they root deeply, for which reason they are somewhat apt to suffer from drought; but a thick mulching of half-rotted stable-litter put on early in spring prevents any risk of this kind, and works little less than a miracle in swelling off the fruit and promoting the general health of the plants. We have often gathered more than a hundredweight of Black Prince from a piece of ground of less than half the extent that permanent plants would require to produce the same, for we plant this variety (forced plants) 1 foot apart between the plants, and 18 inches between the rows. Last year we began planting about the middle of August, and the plants are now perfectly smothered with bloom, and the forced plants of 1871 are but little behind them. I ought to state that when the plants are put out, the old leaves which have been developed in the forcing-house should be shorn clean off, and the balls should be buried as deeply as is possible without burying the crowns altogether. Plants of which the surface-roots are left exposed to the air never do so well.

J. SIMPSON.



FLORIST FLOWERS.

THE AURICULA.

ENOUGH to fill volumes has been written concerning the cultivation of this flower, and it is not to our credit that it holds such a subordinate place in our esteem; nor are the present generation in a small degree free of culpability in treating with cold neglect countless other species whose excellences constitute them the choicest gems which adorn Flora's crown. But we shall not despond, for the time is fast approaching when there will be no reason to lament their absence. There is now a longing for the flowers that were our pets in our young days.

These remarks are not intended as a disparagement of the brilliant

few which captivate our senses, and paint our beds and borders in such gay colours three months of the year, and, I must add, monopolise both, almost to the exclusion of the many. No; they are so good and serviceable in their place that their presence is indispensable. Let us have both, each in its proper place.

That the now popular plan of adopting some of the spring flowers as a break in the nine months' yearly interval of naked beds and borders is a step in the proper direction must be admitted. Still, however acceptable in its way, we have reason to fear the system is too expensive for the generality of people to adopt without considerable sacrifice in other departments of the garden, which are often robbed in proportion to the requirements of a favoured few beds. It is exceedingly nice, this plan of groups and stripes; then the beauty of each kind is much enhanced by being displayed in numbers and in contrast. By all means let us have the plan continued; but, in addition, we want to see old friends in their old places also. This can easily be carried out without the old custom and confusion often witnessed in the herbageous borders—that of cramming in all and sundry without discrimination, out of which, as might be expected, a medley of irregularity and confusion arises, the strong plants overpowering the weak. All that is wanted is a judicious selection judiciously arranged, avoiding botanical collections, unless in a place specially reserved for such an object.

Primula Auricula, or Mountain Cowslip, is one of the most ancient inhabitants of the British gardens. It was cultivated by Gerard as early as 1597; but when it was introduced from its Alpine home (being a native of Switzerland, Austria, Styria, and other highlands of Europe) no authentic record exists, so far as we know. The family is divided into two groups—namely, “Stage” and “Alpine.” The former are more highly refined, and are distinguished from Alpines by the flowers being divided into distinct zones of various rich colours. The Stage group consists of green-edged, grey-edged, white-edged, and “Selfs” of various colours and hues. The Alpines exhibit also a wide diversity of colours and shades of colour, their flowers being generally composed of two colours—viz., the external or ground colour, the “paste” or internal division, which means the eye, and centre, and the cluster of sexual organs fitted into the tube. Alpines are found to be the most hardy of the two, and therefore better fitted for planting in beds and otherwise without the aid of protection during severe weather.

Meantime we purpose discussing the culture of the Stage varieties.

Propagation.—This is effected by division of the root, by offsets of the approved sorts, and by seed when new varieties are in request.

We shall consider, in the first place, the mode of multiplying by offsets. Some authorities recommend early summer ; others any time throughout the year when offshoots can be had, unless in the dead of winter ; others, again, strictly adhere to the early part of August,—each, no doubt, considering his plan the best. Our own practice has been to adopt the August time ; and our reason for doing so is the fact that Auriculas, Polyanthuses, and Primroses start into a quiet autumn growth, more or less, according to the nature of the weather. This growth serves the end exactly of re-establishing old plants in the soil before winter, after being shaken out of the soil and repotted into new soil, a process necessary for flowering-plants once a-year ; therefore this period serves the double purpose of potting and extending the stock. Moreover, the soil is in much better condition when the time arrives for the plants to flower and make their annual growth, being neither so much exhausted by watering or any other means, as if the plants were potted in spring or summer.

The method of separating the offsets from the mother plant is performed by first turning the ball out of the pot, disengaging the soil with the fingers entirely ; the youngsters are then disengaged by slipping them off by the thumb and forefinger with the least damage to old or young. Those offsets furnished with one or two fibres situated at the base of the plants, are in better condition than those higher up ; they strike readier into the soil, and ultimately prove the most robust stools or crowns. Proceeding with the operation, the old plant is next examined, its tap-root shortened back to within 1 inch of the base of the lowest leaves ; the roots are next rinsed in pure water perfectly free of the soil. It will now be seen if any part of the root is affected with a disease called blackrot—a most destructive malady, which always proves fatal when it gets hold of a plant, and is allowed to remain or take its course. The only remedy is to cut out the affected part without leaving a trace behind, no matter at what apparent sacrifice ; then carefully dust the wound thickly over with powdered charcoal, and repot the plant. Next give attention to the cuttings or offsets ; remove any withered leaves by pulling them clean away from the stem, inspect the root, and wash as directed for the old plant. If the root is any way damaged by the separating process from the mother plant, cut it clean away, and dust with charcoal. Then comes the potting. The size of the pots for this purpose ought to be those of 3 or 4 inches diameter ; and the offsets are inserted around the edge of the pots at equal distances in threes and fours, according to the size of pots and plants, but they must not be crowded,—presuming that these pots have been washed from all impurities, as also the crocks intended to act as drainage ; or should the pots be new, they ought to be

steeped in a tub of water and afterwards allowed to dry again. It is most important to have clean pots. Regarding soil, scarcely two cultivators agree; and it would just be a waste of paper to enumerate all the varied mixtures recommended. Suffice it to say that the following simple compound is all that is required: two parts fresh loam, with the fibres well reduced; one part pure river-sand, rather sharp; and one part leaf-mould and cow-droppings decomposed to an earthy consistency. Use rather more than the usual quantity of crocks, and cover with a sprinkling of rough leaf-mould; fill the pot lightly to the rim with the compost, over which spread a little silver sand; then make insertions at proper distances for the plants with a dibbler: when the plants are arranged, press the body gently together, give enough of water to moisten the soil, and they are ready to be placed in the nursery-frame with a south aspect. And the more to facilitate the rooting process, cover each pot or set of pots with hand-glasses, raised a little on one side to prevent damping of the leaves while in their semi-inactive state. Attend to sponging off any condensed vapour that accumulates on the glass daily, and see that the plants stand well up above ground and near the glass, and that a moderate but constant amount of air flows in and out of the frame to dispel the stagnant humidity.

When it is ascertained that they have begun to make fresh roots, remove the hand-glasses; for by prolonging their use after this, the plants will become drawn and weakly. And when the time has elapsed that the young plants have roots enough to warrant their being potted separately, they ought to be potted into pots 3 inches wide, and returned to the frame without delay, so that they receive no check. After a few days the plants will have rallied from any temporary check occasioned by the shifting; so more air and sunshine may be admitted amongst them. Let this be given by degrees, and see that they do not suffer for the lack of water. Allow me here to give a suggestion regarding the kind of pan used in watering. It should be a small one with a short spout, furnished with a sudden bend near the outlet, with the addition of a piece of thin tubing inserted, to prevent the water rushing suddenly and lodging amongst the leaves of the plants. In case of accident, the operator ought to be furnished with a pocket-syringe to extract the water when it happens to get a lodgment in the centre of the plants: the result of water being allowed to remain is to foster rot. Always water in moderation, neither permitting the compost to get saturated nor powdery dry, but keep it just in a slightly moist state, until the succeeding October, when the sun's rays have considerably decreased, and the period has arrived to place them in their winter quarters.

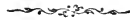
There is some importance attached to the proper construction of the

frame or house wherein the plants are to winter and flower. I shall endeavour to give the details of a two-light frame I used for that purpose many years since, which was found most suitable. The dimensions were: length, 7 feet 7 inches; length of sash, 6 feet 4 inches; height at back, 4 feet 10 inches; and of front, 3 feet. The frame stood on 6 stout feet, and had 8 inches of an opening all round, to secure abundant ventilation from below. The back was furnished with a ventilator which extended the entire length; this was situated near the top. This ventilator was a deal 6 inches wide suspended by hinges, and fitted in flush with the back of the frames. A similar ventilator was in front. The interior of the frame was filled with a stage which rose to a uniform distance with the sashes by means of being shelved, each shelf being 5 inches wide, with a groove run out of the centre of each to carry away the water drained from the pots; distance of stage from glass, 14 inches. Besides the glass roof, both ends were glazed, the glass starting from the lowest or front shelf. Inside the frame, below, was paved with dressed stones, as indeed the court in which both *Auricula* and *Polyanthus* frames stood; it was very dry, owing to the declivity of the ground.

At the commencement of October have all the plants examined. Wash the pots, stir the surface of the soil, remove all moss and weeds, as well as any withered portions of leaves close into the stems, for such leaves become conductors of damp, and occasion the much-to-be-feared gangrene. The frame is changed from a northern to a southern aspect over winter, and water withheld, except when there are signs of flagging. Air constantly, unless in severe frost and foggy weather; this can be done when it rains by letting down front and back ventilators. In very severe frost the plants should be protected by means of mats, and a piece of tarpaulin over them to preserve all dry. Of course such covering must only be resorted to when unavoidable to preserve the plants, and should daily be taken off to give them an interval of light if at all possible.

A. KERR.

(To be continued.)



HINTS FOR AMATEURS.—JULY.

If time can be spared to thin fruit properly, it is labour well spent, both as regards securing good fruit and keeping the trees in good condition for future work. This, however, applies to trained trees, and those which have to be kept within bounds with the knife. Young trees—as bushes—whether small fruit or large, are all the better of having

their hearts opened out ; an hour's work, by an active hand, would go over a great many bushes, and the time would be profitably spent. There is generally so much to do at this season, that trees have in a great measure to be neglected, and the work has to be done in winter, which is much against the wellbeing of the trees. Stopping of gross shoots, rubbing off others which are too thick or misplaced, is important work at this season,—so much of canker and gross fruitless wood being caused by crowding during the growing and ripening season, and the severe use of the knife in winter, when the wood may be only half ripened. A little examination of the roots from this time to September may do much to make the trees fruitful next season, and keep the balance of the tree even. This operation has to be done with great caution, finding the way to tap-roots by degrees, leaving a large portion of the tree untouched till the roots lifted now are again healed and growing into any new soil which may have been placed within their reach, and made firm. The other portion of the roots may be lifted in autumn, just before growth entirely ceases. We have more faith in this practice than in tearing up and cutting roots severely, as is the practice of some. Keep insects off with tobacco-water applied by a syringe. Trees with their roots near the surface may require mulching and abundance of water. Young trees should have their shoots carefully trained, stopping gross growths in time to get the branches to spread, and a year's training might be gained, and the mischief caused by cutting back strong shoots avoided. Strawberry runners should be secured as early as possible for fresh plantations. Water (if required) liberally those newly planted which may have been forced, and keep all runners off them unless they may be wanted for stock.

When time can be spared from keeping lawns mowed, weeds rooted out, edgings clipped, the frequent use of the hoe among flowering-plants, and other work necessary, budding of Roses may be done, Pink cuttings put in, Carnations layered, cuttings of herbaceous plants put in shady positions, Chrysanthemum-tops layered in small pots for special purposes, cuttings of rare plants put in to be increased for next year's bedding stock ; much of this work well done goes far to make up the interest of the garden. In large places these things have often to be passed over for want of time to spare. In amateurs' gardens the amenities of gardening have the best attention, amateurs doing the work for pleasure alone. Keep Dahlias well tied to their stakes ; give manure-water if the soil is poor.

Plants to supply flowers during autumn and winter should now receive liberal treatment, and no check given by withholding water or starving the roots in very small pots. This applies to Cinerarias, Primulas, Chrysanthemums, Salvias, and all the usual hard-wooded

plants. Any of the latter requiring a shift, should have attention without delay. Others well advanced in their growth should be induced to rest, so that their growth may get matured and ready to flower abundantly at the proper season. This chiefly applies to early Azaleas, Camellias, Cytisus, Coronillas, Acacias, Chorozemas, and others, which by special treatment can be had in bloom early in the winter, and when they are not in an unhealthy or pot-bound condition, will keep in bloom for months.

Bring forward successions by shutting up the structures early with moisture and sun-heat, many of the hardy forcing plants, such as Deutzias, Kalmias, Weigelia rosea, &c. Wood early ripened, and the buds formed in due time, is better than hard forcing in autumn and winter. This applies particularly to Camellias when they are wanted by November. The drainage of pots should be kept perfect, and worms kept out. This is a good time to sow Calceolaria seed. Keep the seed-pan rather shaded from hot sun, but cool and airy. Small seeds of this kind scarcely require any covering—a square of glass placed over the surface will keep off slugs. Seed pots and pans when in use should be kept perfectly level, otherwise the seed may be washed to one side. Balsams, Cockscombs, Globe Amaranthus, and similar plants, on stages coming into flower, may have their pots placed into a larger size, which will shield the roots from hot sun. Give manure-water frequently to Fuchsias, Pelargoniums, and other soft-wooded plants in flower. Stir surfaces. M. T.



NOTES ON HARDY FLOWERS.

Eriogonum.—A genus of pretty hardy flowers, of which a few species are in cultivation. They are related to the Polygonums, but, unlike the majority of that family, are neat-growing, free-blooming plants, well worth the attention of the lovers of choice herbaceous and alpine flowers. It is an American family, found chiefly on the mountains of the north and north-west of that continent. They are all best adapted for rockwork, and form beautiful tufted masses in sunny positions. Sandy loam suits them best, and the drainage should be good, but in the growing season they will take copious supplies of water with advantage. They are easily propagated by cuttings while stock is scarce; but when plentiful, abundant increase may be obtained by means of division. Trailing shoots are sent out resembling Strawberry runners, with a tuft of leaves at the points, which may be taken off and rooted in a cold frame or hand-glass in sandy loam and leaf-mould, keeping them close-shaded and moist till they are rooted, inuring them after-

wards to air and light gradually. Or the shoots may be laid in the same way as Strawberry runners are laid, covering the base of the leafy extremity with sandy soil. Towards autumn the layers and shoots may be planted out in their permanent places. They are plants by no means often seen in private gardens, but from their free-blooming quality, pretty flowers, and neat habit, it may be said they only require to be better known to be more generally grown. Their flowers are very persistent, and consequently last long.

E. compositum.—This species reaches the height of about 9 inches, growing in rather flat masses. The leaves are evergreen and ovate, with a heart-shaped base, clothed with grey down beneath. The flowers are numerous and small, in compound umbels on simple stalks, rising well above the foliage, yellowish white, appearing in June.

E. sericeum.—Rather a smaller-growing species than the last. The leaves are ovate, hoary, with close-lying silky hairs above and below, the under side being very densely covered therewith. Flowers 9 inches high in umbels, yellowish, opening in June.

E. umbellatum.—Similar in habit to both the preceding, and in foliage also, but deeper yellow in the flowers, which open about a fortnight later than the foregoing; the prettiest, best, and newest of the group.

Ranunculus parnassieifolius.—This is a rather rare species from the south of Europe, very pretty and interesting, hardly ornamental enough to find favour with those who derive their gratification from floral display merely, but on rockwork or in pots always pleasing to the admirer of simple flowers. It succeeds best in peaty soil, or in leaf-mould and loam, the latter in the proportion of a third of the former, well drained, but moist. It forms a handsome plant of compact growth, with the leaves mostly radical, a few only being developed on the stems where they branch. The root-leaves are roundly egg-shaped, very dark, shining green, those of the stem are broadly lance-shaped. The flowers are large relatively to the other parts, pure white, and open in July.

R. cortuseifolius.—This, like the last, is rarely seen in cultivation. Though a very handsome species, it is not enduring enough to be placed among the more ornamental hardy flowers in any arrangement where a continuous display of colour is required to be kept up. Its most proper place is on the rockwork, in moist, rich loam, where it forms very interesting and showy tufts of handsome leaves and large bright yellow flowers.

Dracocephalum.—Several species of this fine genus are admirable subjects for ornamental borders of hardy flowers. They are profuse-blooming, showy plants, which should be in every good selection of

herbaceous plants. Any good garden-soil suits them well. They are easily increased by division, and also by cuttings—the latter in autumn, the former at any time after growth is fairly matured, which is after flowering ceases.

D. grandiflorum.—A very distinct and handsome species. It forms compact tufts about 9 or 12 inches high. The flowers are produced in whorled spikes, are bright blue, in form Pentstemon-like, opening in July. It likes a warm, sunny situation, and is rather impatient of continuous wet at the roots. Native of Siberia.

D. moldavicum.—A more erect-growing kind than the last, and freer flowering, but the flowers are smaller, though in the mass not less showy. They open in July, and last till September.

Papaver orientale.—This Poppy is near akin to the *P. bracteatum*, but differs from it in an important respect as regards its adaptation to ornamental purposes. It has the the showy orange-scarlet flowers of *bracteatum* on stems not quite half the height of that species. The foliage of both is alike, and handsome in character. An excellent plant for large rock-gardens, and for herbaceous borders of the showy description; in deep loam the flowers are produced for a couple of months or more, on end. Propagate by division of the roots, and by seeds. In dividing, let it be done in spring or early autumn—when done too late in autumn, the divisions are apt to rot; and let it be done with some care, and not too minutely. It usually seeds freely, and stock may be kept up by sowing a few seeds in anticipation of requirements, better than by division. The plants are kept in better health by being lifted and transplanted every two years.

Meum athamanticum.—An umbelliferous plant, with very handsome leaves, on account of which only it is noticed here. The foliage is a most beautiful dark green, and most delicately divided into hair-like parts. It is produced in dense rounded tufts about 9 inches high, which have a very handsome appearance in ornamental borders. The flowers are valueless and should be cut away, but the leaves may be employed with excellent taste in introducing a variety of a very pleasing description among gay bedding-plants. It is easily but not rapidly increased by division of the roots.

Myosotis rupicola.—One of the finest of the Forget-me-nots, but not often seen. It forms tufts of dark-green foliage, 2 or 3 inches high, which are covered with the bright blue, yellow-eyed flowers. It is best adapted for rockwork, or culture in pots in shady moist positions. It flowers in May and June. Divide in early autumn, but not very minutely, and by seed sown in spring, or when ripe. It is a very rare British plant, found on the tops of some of our highest mountains.

W. S.

PEACH CULTURE UNDER GLASS.

DISBUDDING OR SUMMER PRUNING.

WHAT is known by the term disbudding the Peach, consists in the removal of all the buds while in a small state that are not required to grow into shoots, to furnish wood bearing fruit for the following year. This operation should be begun early, as soon as the buds have started. They should not all be removed at once, but at three different intervals of time. At the first disbudding remove those which are termed by gardeners fore-right buds—that is, those that are on the front side of the shoots and that would grow at a right angle from the trellis—and those which are situated on the opposite side of the shoot, thus leaving those that are right and left. In about twelve or fourteen days after this, about the half of those left should be removed at intervals along the shoot, always leaving the best-looking two buds near the base. The trees should be examined, and finally disbudded in about a week after removing all except the most promising bud near the base, which is to form the chief growth for next year's fruiting; on short stubby growths, this bottom bud and the terminal one will be enough to leave. On longer shoots, one or two intermediate ones may be left if there is room enough to tie them in without crowding the tree. But always give the preference to the lowest-placed buds.

In removing the last of the superfluous buds, when they have got stronger than those taken off at the first and second disbuddings, a thin sharp knife should be used, as it makes a less and cleaner wound than when they are detached by the hand. The leading shoot, if not required to furnish the tree as in the case of young trees, should be stopped when it has grown 1 foot; but allow the lateral growths for next year's fruiting to grow their full length, and keep them regularly tied to the trellis as they grow—using for this purpose soft matting, taking care not to tie too tightly, but leaving room sufficient for the wood to swell.

The common error of tying in too many young growths should be avoided, as one of the greatest errors in Peach culture. It crowds the tree with wood that is not required, and prevents the sun and air from acting properly on the foliage, and the result is weak, unripened, and unfruitful wood. Whenever any given growth shows that it is going to be much stronger than the rest, it should either be cut out altogether, or stopped, and restopped if necessary, to prevent its monopolising the sap that should go to the other parts of the tree.

After the fruit are all gathered, look carefully over the trees and untie and cut out at once those shoots from which the fruit have been

gathered and which are not necessary for another year. This gives more room to the young wood required for the ensuing crop, and concentrates the energies of the tree on their maturation. It is not easy nor necessary thus to cut out all the wood that requires to be removed, but the lessening of it leaves but little to do at the winter or early spring pruning, as the case may be, and it lets more air and light at the foliage and buds of the shoots that are left, and necessary to furnish the next crop.

THINNING THE FRUIT.

All Peach-trees that are vigorous, and the wood of which has been well ripened, generally set a great many more fruit than are needed, and therefore they require to be thinned off. This operation should not be completed all at once, but gradually, and not finally till the fruit are stoned. As soon as the fruit have swollen sufficiently to burst and throw off their flowers, the first thinning should take place. Where the fruit have set in clusters of twos and threes, remove all but the best-formed and largest fruit, those that are placed on the under sides of the shoots and those that are very near to the wires, and that would not get room to swell if left. When the fruit have attained the size of marbles, a second thinning should take place, removing all the smallest fruit and those that are nearest the top and the bottom parts of the bearing shoot—leaving the largest about the middle of them. Although I have never experienced very much dropping of the fruit in the process of stoning, it is always best to leave considerably more at the second thinning to be removed after they have completed the formation of the stones; then the final thinning should take place. The weight of crop must be regulated by several considerations: if the trees are young, and show a tendency to make too strong a growth, then it is best to crop rather heavily, say a fruit to every 6 or 7 square inches of surface. The ratio of cropping should be graduated according to the vigour of the trees. Those which have covered a considerable allotted space, and that are in what may be termed good bearing condition, should not be taxed so heavily. If fine fruit are required, a fruit to every 10 or 12 square inches is sufficient. Of course their distribution may be unequal, and it is desirable that on the lower branches—stretching more at a right angle with the stem—the fruit should not be so thick as on the central parts of the trees, which have a tendency to become over-vigorous at the expense of the lower ones.

ROOT-PRUNING.

I am averse to root-pruning the Peach and Nectarine, or any stone fruits, according to the fashion recommended by some, and have never

found it necessary to cut away many of their roots after they were first planted. I have never found much difficulty in subduing any tendency that young trees have had to grow too grossly by pinching the shoots when growing, and directing the energies of the tree to its other parts. I think the practice of continually cutting hard back, and preventing the trees from making a more natural headway, has much to do with gross shoots. Letting the young trees bear heavily, in conjunction with the training indicated above, is generally sufficient when the trees are planted in a loamy soil into which rank manures have not been introduced. However, cases do occur when the roots have to be dealt with in the case of some of the stronger-growing varieties. Then I would recommend a trench to be taken out at a radius beyond where the roots have extended. Encroach carefully on the roots, removing all the soil—but saving every possible rootlet—close up to the bole of the tree, or as far up as the check that is desirable would demand. Unless it be some roots very much out of proportion to the others, they should not be cut back, but be all carefully laid in the border again with some sound fresh loam under and over them, making the soil all firm about them again. This operation I prefer doing just as the leaves are nearly all dropping off. If done earlier, the wood is apt to shrivel instead of ripen.

FORCING AND GENERAL MANAGEMENT.

Time to commence forcing.—The time when ripe Peaches are required, must of course regulate the time when forcing has to be commenced. As the Peach and Nectarine will not submit to hard forcing, especially in their earliest stages of progress, it takes about five and a half months to ripen a crop when forcing is commenced late in November. This may be termed very early forcing. On referring to my note-books I find that trees started—by being shut up without fire-heat for the first fourteen days—on the 15th November, ripened their first dishes of fruit from the 24th to the 30th April. Those started in January and February take fourteen days less time, but the character of the season has much to do with the exact time required to produce ripe fruit. Unless where there are several Peach-houses, such early forcing is not desirable, and if the trees are not in good condition it should never be attempted. From the beginning to the end of January is a good time to start the earliest house, where there are, say, three Peach-houses, allowing the interval of a month between the starting of each house. These early houses, with a late one in which no fire-heat is used beyond what is necessary to protect the trees from frosts or to ripen the wood in autumn, keep up a long succession of Peaches when the selection of varieties is made to this end. In the case of young or newly-planted trees that have not been

accustomed to early forcing, February is sufficiently early to begin to force them the first year. The second they may be started a month earlier. By beginning a few weeks earlier every year they can be worked round to start at any time within the limits of what is practicable, much more safely than by beginning them very early the first and second years. It may be said of plants and trees in this respect that "use is second nature;" for unless violently pushed they will have their period of repose, and the Peach most particularly should never be subject to hard forcing.

DRESSING THE TREES AND BORDERS.

Let it be supposed that the earliest Peaches have been pruned, and the woodwork and glass of the house thoroughly cleansed. If there has been any red-spider about the trees the previous season, let the whole of them be first washed by means of a hair-brush and soft water, in which about an ounce of soft-soap to every gallon has been mixed. After the trees are dry, coat them over with a mixture of sulphur, cow-dung, and soot, in equal proportions, and reduced to the consistency of thick paint with hot water. To a gallon of this add 2 oz. of soft-soap. In painting the trees over with this, care should be taken always to draw the brush upwards towards the points of the shoots, to prevent the prominent buds from being rubbed off. I have often started Peaches without this dressing, and only consider it necessary when the trees have been attacked by red-spider the previous season. In tying the trees, care must be taken to rub off as little of the dressing as possible.

The surface-soil should be removed from the border to the depth of 2 inches, and replaced with pure fresh loam in the case of young vigorous trees in new borders. In the case of old trees that have borne heavily for a succession of years, remove the soil down to the first roots, and replace it with an equal amount of loam, with a third of horse-droppings or well-rotted manure mixed with it. If the inside border is dry, give it a good soaking with tepid weak manure-water. Presuming that these operations have been attended to a fortnight before the house is to be shut up for forcing, still keep the house cool and well aired, but keep the trees dry, so that the dressing does not get washed off them. The outside border should always be protected from cold and wet at the same time by a covering of litter and leaves and a tarpaulin, or other means, such as wooden shutters for throwing off drenching rains. This is supposing that forcing is begun before the end of February.

TEMPERATURE.

Unless the weather be frosty when the house is shut up, no-

more fire-heat should be applied than is necessary to keep the temperature from falling at any time below 45° at night. In mild weather it will necessarily range higher without fire-heat. After the house has been shut up a fortnight, firing in a regular way should commence, and the night temperature be kept at 50° , allowing it to sink a few degrees lower on very cold nights ; with a day temperature 10° higher with sun. If a higher temperature be maintained at first, the trees are subject to start their wood-buds before the blossom-buds, and the blossom under such circumstances is sure to be weak and likely to drop off before it expands. By the time the blossoms are open the night temperature should be gradually raised to 55° , with a corresponding rise by day with sun. After the fruit are set raise the temperature by degrees to 60° at night, and with sun it may safely run to 70° or 75° by day, according to the intensity of the sunshine. Until the fruit are stoned the night temperature should not exceed this. After they are stoned it may be raised to 65° , and to 80° with sun-heat by day. In the case of early forcing, of which I am now treating, I do not recommend a higher temperature for Peaches than the last named—not that there is any fear of the fruit dropping off with a higher temperature after the stoning process is past, but I have always found that the moderate rate of forcing produced finer Peaches and wood than are attainable with more rapid forcing. Of course very much depends on the state of the external atmosphere, as every experienced forcer knows. With mild weather, the temperature I have named may be exceeded by a few degrees with impunity, even with advantage. On the other hand, in time of very severe frost, when hard firing is necessary to keep up the proper temperature, it is wisest to let the heat decline a few degrees. After a day of bright sunshine, which more or less heats up all surfaces, the house can be shut up with a higher temperature, and the heat husbanded, so that very moderate firing keeps the heat up in the fore part of the night higher than I have named, and under such circumstances there is no objection to this.

Of course when forcing is commenced later in the season, and the trees are more easily excited, and produce their blossom and young wood more strongly under the influence of increased light, the temperature may range a few degrees higher with safety. For instance, a house started in December, for which 50° with fire-heat would be sufficient, might, if not started till far on in February with more natural warmth and sun by day, be started at 55° with fire-heat after the trees are moving naturally. In bright weather, early shutting up with sun-heat should always be preferred to hard firing without sun.

D. T.

IMANTOPHYLLUM MINIATUM.

THIS is a grand spring plant, and not so much grown as it ought to be. When grown in 6 and 8 inch pots, they are found most useful for decorative purposes when in bloom.

After flowering in early spring, if the plants are getting large, break them up, putting them into pots the sizes mentioned, using good fibry loam, leaf-mould, a little silver sand, with a few pieces of charcoal. The pots should be clean and well drained, as when in active growth liberal supplies of water must be given. When potted, let all be placed in a temperature about 60°, shading from bright sun until taken to the fresh shift, when daily attention in watering and syringing throughout the season will be required. They will soon start into growth, and make nice plants if not kept too close nor shaded. Those that are intended for larger plants ought to be shifted on into larger pots whenever the roots have all reached the sides of the pots, as they should never be allowed to get matted. Place them in the same house, and give them the same treatment. Those that have not been shifted should be assisted with weak manure-waterings. As the autumn advances, water to a certain extent should be withheld, at the same time reducing the temperature gradually to about from 40° to 45°; in this they will stand all through the depth of winter, requiring little attention, except an occasional watering, as they must not be allowed to get too dry. In spring a few might be placed in a warm house to induce them to throw up their flowers a little earlier than the general stock. When allowed to flower in a cool house the flowers are richer in colour, and last much longer than those that have been forced. It is also a most useful thing to cut from, and, like the *Gladiolus*, opens its blooms after being cut and placed in water.



SOME REMARKS ON THE POTATO IN HEALTH AND DISEASE.

IT will be remembered by those gardeners who read the 'Horticultural Transactions' of 1828, that the President astonished the ordinary plodders in the culture of this tuber by his superior culture of the plant, and its extraordinary productiveness under his directions. A strong kind which he obtained from the Society, called Lankman's, he cultivated, and the produce was at the rate of 539 bushels, of 82 lb. to the bushel, per acre; and from the Old Ashleaved Kidney, he obtained at the rate of 695 bushels per acre, of 82 lb. to the bushel.

"No one" would believe Mr Knight's statement. Mr Loudon wrote against it; but I believed it, as I had assisted to take up a crop of Potatoes in the north of England which was at the rate of 18 tons per acre. This was done long before the 'Gardeners' Magazine' started, and at a place where the great philo-

sopher Mr Knight had never been heard of, and where the gardener's library consisted of Abercromby, Culpepper, Down's Catalogue, and the Lichfield Translation of the Genera. Yet Mr Knight's crop of Ashleaved Kidneys of 695 bushels and 3 pecks exceeded the rate of 25 tons to the acre.

After these statements, the most astounding part of it is that these "rule of thumb" gardeners in the north of England should have obtained such a maximum of produce from the Potato before there were any scribbling gardeners to direct them. Though they may have read Newton's theory of gravitation, they in all probability never applied it to the culture of the potato in the light that Knight did; but they arrived at their maximum by dint of observation in their failures and successes.

Be that as it may, I went to Downton Castle to see the Potatoes, and Mr Knight, with fork in hand, took me to his Ashleaf and other kinds of Potatoes, and he turned out some roots, the crop being such as would have convinced any doubter that his statements in the 'Horticultural Transactions' were correct. I gave him a little of my previous experience in the culture of the Potato, which enabled me to be a staunch believer in his immense crops of the then delicate Ashleaved Kidney Potato. I had read Mr Knight's theory that plants, like animals, have but a given time allotted to them on the earth, and I asked him what age from seedlings he thought the potato began to fail. He said that at about 14 years old the generality of them reached their maximum of productiveness, and after that they gradually failed, till at length no one would grow them, and they became extinct.

I remarked that the Ashleaf appeared to be an exception to the rule, and he said it was.

Now I never read of this gentleman's sayings in bygone days, but the couplet of Burns forces itself on my memory—

" Thus by some hedge the generous steed deceased,
For half-starved snarling curs a dainty feast."

That this philosopher's bones have been well picked there cannot be a doubt; but then the more we pick them, the more brilliant does their phosphorus appear.

Hence in these observations I shall not only repeat what he, *viva voce*, advanced towards an explanation, as it afterwards proved, of the cause of the so-called Potato disease, long before it absolutely showed itself, but I shall endeavour, however roughly, to utter what he would have advanced, as a means of preventing such a calamitous loss of Potatoes as we now so frequently suffer, had he been with us.

It is patent to vegetable physiologists that the Potato is a plant, both stem and tuber, composed chiefly of cellular tissue, its vascular tissue being but trifling even in the haulm when ripe in the autumn. That this latter tissue, or something approaching it, was produced in the haulm of late Potatoes more than half a century ago, was clear enough, as without careful handling the men got cuts on their hands when drawing the tops to make way for the plough to turn out the tubers. Such was the healthy condition of these (let us call them) vascular potatoes, that I have seen them stored 6 feet thick, and found perfectly sound in the spring.

The disease in question had never been heard of, but we did occasionally hear of the "curl" having appeared on some favourite sorts. It would now appear that the "curl" was a forerunner of the serious events which we have seen befall the Potato. The "curl" appeared on the vascular kinds more generally

than on the cellular sorts; and when this disease so far emaciated the crop, the kind was abandoned; but the early or cellular kinds and second earlies, with their broad succulent foliage and almost as succulent stems, merited and obtained the attention of the gentlemen's gardeners.

The Ashleaved Kidney took the first place for a long time.

Amongst a great number of new kinds of Potatoes which "came out" for the approbation of the public, the Lapstone with its varieties appeared, and, in my humble opinion, the climax (in beauty of plant, in smooth perfection of tuber, in produce of crop, in flavour) was reached. It also affords a "dish" of good Potatoes from July to July; in fact, no other kind is required when it is free of disease. But it was deficient in that racy flavour which the Ashleaf possesses, for a short period of its season, and that is from the time the haulm takes a yellowish colour until they appear dark brown. To supply the table with this racy-flavoured Ashleaved Potato (though it is now doubtful if we have not lost it), I used to plant successional crops from January to June; and it is from that practice that I think I am able to prove Mr Knight's theory correct—that the potato never had any "disease" save that which arises from old age. A part of this garden falls sharpish to the north-east; and when the late-planted Ashleaf Potato was located there, and a cold rainy autumn set in a few days earlier than usual, the haulm turned "blotchy," a part of the tubers rotted, and the other part was used for seed, as they were not good for the table. As we thought we knew the cause, no more was said about it at the time. However, the late-planted crops of this kind (we did not try any other sort) became so unsatisfactory that we discontinued late-planting long before the so-called disease showed itself so extensively as it did in 1846. As the "disease" appeared in so many different kinds of Potatoes, I quite agreed with the generally-accepted opinion that atmospheric influence was the mysterious cause of the lamentable failure of the Potato crop. Observation, hearing, and reading, keeping pace with time, I was obliged to "hark back" to Mr Knight's theory—*i. e.*, that the days allotted to each kind from seed are numbered, and all the pains which have been taken by so many first-class practical men, as well as by a phalanx of lynx-eyed philosophers, to prove to the contrary, is visionary, in fact mere dreams. The experience of the last year is proof sufficient of my own visionary ideas, when I lost from 50 to 80 per cent of the best Potato ever known to me—the Lapstone, or Haigh's Seedling.

It is hardly necessary to say any more in proof of this theory of the late President of the London Horticultural Society being the true one, of the cause of the failure of the Potato of late years, when the atmospheric conditions were such as to neutralise the efforts of those old cellular kinds to ripen their tubers, as well as other short-lived kinds. I cannot recount, however, the number of kinds which have appeared and become extinct since the disastrous year of 1816, when we had a fine spring till the 28th May, when a severe frost occurred and *destroyed* the products of the garden; Potatoes nearly ready for market were killed. This was followed by a wet summer and autumn, and though the Barley rotted on the ground in the north of England, yet the Ashleaf and all the other kinds of Potatoes were sound.

Thousands of people became victims to the disease brought about by empty stomachs; and had not the Potato been sound, tens of thousands would have perished by the same means.

Hence we may surmise, from what has happened, that the Potatoes have gradually declined in strength since those days, till they have fallen inactive under an atmosphere which overpowers their functions, already debilitated by age.

Had we been staunch believers in Mr Knight's doctrine, we might have avoided much of the loss we have sustained.

But lured as we have been by early and highly productive, racy-flavoured, and exceedingly cellular kinds, which from their delicacy are short-lived, we neglected, through our ignorance and unbelief, the vascular and consequently more hardy kinds, which do not collapse under the same atmosphere as the above-mentioned sorts.

Our attempts in the future are now clear enough.

It is not probable that we shall abandon our favourite cellular kinds; but we must rear seedlings from the vascular kinds, and not "cross" them with the cellular sorts, as a means of furnishing us with late Potatoes that will withstand such rigorous years as those of 1816 and 1872.

Mr L. G. Moore tells us, in the Germantown 'Telegraph' of April the 9th, that he formerly had an old kind of Potato called the "Whig," which was an excellent Potato, and which was never diseased, and it maintained its good qualities late in the following summer; but it was a poor cropper, and became supplanted by the Peach Blow. Therefore let us apply to our American cousins for the Whig Potato, and rear seedlings from it without crossing it with any other kind, and let us see what can be done in this direction.

This *theory* of the most cellular varieties of the Potato suffering more than the robust kinds by excessive moisture and a low temperature is not confined to the humble Potato, as it holds good in other kinds of plants and trees—the Peach and the Apple, for instance.

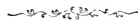
The Peaches here suffered so much by the late rains that many of them "died back" considerably. A favourite Balgowan Nectarine, that I thought was a hardy fellow, had not a good blossom upon it. The Ribston Pippin Apple suffered severely, and Alfriston dropped every leaf early in the autumn, and is now to all appearance dead.

There is another of Mr Knight's *theories* which I have proved true in practice.

When looking over his Peach-trees, which had been seriously affected with the "blister," a cryptogam which very much damaged the foliage of the Peach, about 40 years ago, he observed that the Peach did much better, and the trees lasted longer, when budded as standards or half-standards, not only because the manipulator had a chance of performing his work better than when standing on his head, as it were, but because the sap received such a degree of elaboration in the stem of the stock as rendered it more congenial to the sap of the bud, and hence a more complete union of the two was made. In proof of which I found a half-standard, glandless, rough-leaved Royal George Peach here 45 years ago, which is still bearing a crop of fruit, while during that time several generations of dwarfs have been sent to the wood-pile. I presume it is imperfect workmanship which lets moisture to the crude sap, and disease is established.

KINLET, BEWDLEY.

JOHN PEARSON.



THE HYDRANGEA AS A DECORATIVE PLANT.

THE common *Hydrangea hortensis* is perfectly hardy in the south of England, the Isle of Man, and other parts of the British dominions; but it is as a pot-plant that we would here allude to its excellence.

Doubtless some of our readers may have seen the beautiful little

plants of this species now being brought into Covent Garden Market by the London market-growers. These plants are propagated from cuttings in the autumn and spring, and flower in from twelve to fifteen months, bearing from one to four magnificent clusters of rosy flowers. Some of the largest, or autumn-struck plants, vary from 18 inches to 2 feet across, and are literally one mass of bloom, and invaluable either for window-plants or conservatory decoration. I visited a small market-garden at South Acton the other day, and saw a long span-roofed greenhouse quite full of this beautiful plant, while hundreds had already found their way to Covent Garden before my visit. In the turf-pits outside, 4000 cuttings had been potted off ready for next year's supply, and this in one small establishment only—a fact quite sufficient to show the high estimation in which this plant is held around London. Old plants furnish quantities of fine cuttings, which strike freely in a moderate temperature, after which they are at once potted off in good fibrous loam, leaf-mould, and sand, and placed close together in any empty space at command. The leading growth is pinched out at the second or third joint, so as to obtain strong bushy plants as dwarf as possible. As the pots become filled with roots, they are again potted on into 48's, and the larger ones into 32's, and in these they produce their flowers. During summer they are liberally supplied with water, a little manure-water being occasionally added to strengthen their growth. They are kept as near to the glass as possible while growing, and fully exposed to the sun, by which means the plants are kept dwarf and bushy. The aim of the market-grower is to get these plants into the market as early as possible, since a much better price is thus obtained. Those now in the metropolitan market sell wholesale at from 24s. to 30s. per dozen, and are eagerly bought up at the price. The market-grower has, in fact, but little difficulty in disposing of his flowering plants or cut-flowers, provided they are good in quality and early, these being the two great essentials necessary in order to succeed.

Every one who has to keep up a succession of flowering plants in either greenhouse or conservatory, will find yearling plants of the common *Hydrangea* invaluable for the purpose at this particular season, and for the next month or six weeks. We often see the *Hydrangea* with poor greenish blossoms; but if grown close to the glass in a low span-roof house or pit, fully exposed to sun and air, the flowers finish off beautifully, and are of the brightest rosy hue imaginable. When growing, the plants require but little room, and when in full flower are very effective when grouped along with *Fuchsias*, *Pelargoniums*, *Ferns*, and other decorative plants.

F. W. B.

AGAPANTHUS UMBELLATUS.

THE African Lily, or, as its generic name implies, Love Flower, sent to this country from the Cape of Good Hope about 1690, is one of these fine old-fashioned plants so much prized by gardeners of the last century that it formed one of the principal features in the midsummer or early autumn decoration of their greenhouses and conservatories.

Like many another really valuable species, however, it seems to have fallen into the shade—novelties, many of them of questionable superiority, having taken its place; and it may now be fairly numbered among “neglected plants.” This, we are convinced, is not as it should be, seeing that it is one of the easiest managed and most beautiful of flowering plants, combining handsome foliage with flowers at once elegant and distinct in colour from anything else in its way; so much so, that a well-grown specimen, with its bold flower-stems surmounted with umbels of bright blue florets and grand flag like bright green leaves, is an object worth a considerable amount of trouble to obtain, and worth a long journey to see. Apart from its undoubted value as a conservatory plant, there are a number of purposes to which it may be usefully applied in outdoor gardening. Planted on the margins of artificial lakes or ponds, on terraces and lawns, or in arrangements of subtropical plants, it has a most striking effect, whether in or out of flower. It is, moreover, in these days when there is such a demand for plant decoration in dwelling-houses, important to add, that no subject is more patient under the severe ordeal of a few days in a hall or staircase; and nothing in such a position looks better.

Though as nearly as possible hardy, and able to stand a few degrees of frost without injury, it requires protection in winter. A late vinery, the back of a greenhouse stage, or any out-of-the-way corner, with just enough of heat to keep out the frost, and where it will be kept moderately dry without being parched, and at the same time sufficiently cool to prevent its being excited into growth, will form admirable winter quarters; while in summer it should be plunged in a sunny exposure out of doors, and if wanted for the conservatory, taken inside when the flower-shoots appear. During the growing season it must have a regular and abundant supply of water, not only at the roots, but, if the weather is dry and hot, over the leaves. In a rich soil, with plenty of moisture, it grows with great luxuriance, and will soon fill the largest pot or tub with its thick fleshy roots. It flowers, however, most profusely when it is somewhat pot-bound, and should only be shifted when it is desired to increase the size of the specimen, or when the pot is so full of roots that it is impossible to give it the

necessary supply of water. A good compost may be made up of equal parts of strong turfy loam and fibry peat or leaf-mould, with as much sharp sand as will make it moderately porous. An occasional dose of liquid manure may with advantage be given, during the growing season, in cases where the pot is full of roots and the soil to some extent exhausted: in no other circumstances will this be necessary, as undue luxuriance is prejudicial to the abundant production of bloom. It is readily propagated by suckers or offsets, which, taken off at any season, soon take root and grow freely. Among a number of varieties, *Albus* and *Variegatus*, the one with white flowers and the other with variegated leaves, are the finest, and form interesting companions to the species.

OMEGA.

SWAINSONIAS.

As greenhouse Climbers, these are beautiful and elegant plants, and very useful for cutting, and where there is a large demand for cut-flowers, they should be grown largely. They thrive best planted out in a border of good fibry loam and peat in equal parts, rather lumpy, with a dash of silver sand, all well mixed together. Particular attention should be paid to the drainage of the border, so that there is no stagnant water, which is very injurious to this plant. If the plants are young, and the roots not matted, they may be planted without disturbing the roots much; but a medium-sized plant with a quantity of roots matted round the side of the pot should be carefully loosened with a pointed stick, laying the roots out much in the same way as Vines are planted. Water should be given sparingly at the first until the roots have got hold of the fresh soil, which will soon be known by the plants beginning to grow strong and freely. Let them be syringed twice a-day throughout the summer, as, if kept in too dry an atmosphere, or dry at the roots, red-spider is apt to attack them, causing much of the foliage to drop. As the autumn advances, water more sparingly, but not so that the plants suffer, giving no more through the winter than will keep the soil in a medium state of moisture until the following spring. When they show signs of starting into fresh growth, remove all the loose soil from the top of the border, being careful not to injure the roots, giving in return a top-dressing of fresh compost similar to that recommended for planting in at first. They will grow very rapidly the second year, and soon cover a large space of back wall, for which they are well adapted, and will flower freely if all has gone well previously. They strike freely in sand and leaf-mould under a bell-glass.

A. H.

TEMPERATURE OF FORCING-HOUSES.

MAY I be permitted a small space to support Mr Simpson's argument on the above subject. We have a vinery here planted with different kinds of Grapes, and one end is occupied by Muscat of Alexandria: but before this year, the said variety could not be got to set well, though the night temperature was kept at 75° , and other methods employed that generally insure success. This year the house was started in the usual way, early in March. All went well until the bunches were coming into flower: at this period we would have raised the night temperature to as nearly as practicable 75° , but to our chagrin a "flaw" presented itself in the boiler, and in consequence of this, they received but very little artificial heat during the whole time they were in flower; partly owing to the condition of the boiler, and the state of the external atmosphere, the thermometer almost nightly went down below 45° . We had grave doubts about our Muscats, but we made the utmost of solar heat, and syringed freely on bright afternoons, and instead of a failure, we have the finest crop of Grapes the Vines have ever produced. Being one of the rising generation of young gardeners, I would like to conclude by heartily thanking Mr Burbridge for his words of encouragement at page 275.

A. R. C.

ON KNOWLEDGE, ATTAINED AND ATTAINABLE.

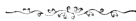
OF all the belles in the country-side, the Blue Bells of the wood carry the bell for grandeur and effect during what we fondly call the "merry month of May." No dwarf plant, neither native nor foreign, with which we are familiar, supplies such a beautiful sheet of richest blue as this lovely native of the grove. They generally have their habitat where they are partially shaded and also tolerably sheltered, and therefore do not suffer from the biting north-east winds, which have been so prevalent during last, or indeed during the generality of May months. During last month these Blue Bells have been the finest we have ever seen. Doubtless they imbibed a goodly supply of moisture during the late rainy season, and were thus prepared to send up and sustain a more than usually fine head of bloom. Every one at all capable of appreciating natural beauty must admire these lovely denizens of the grove, especially as sheets of blue are scarce in our modern flower-gardens; and the thought springs up, how can we accomplish such an acquisition? Hybridisers and other adepts pretend, and no doubt have done much, to alter and improve both fruits and flowers, but the little accomplished only shows how very much more remains to be done. It may be considered absurd even to imagine

that this native bulb could be induced to alter its time and manner of flowering—something like washing the Ethiopian white : with our present knowledge of natural law, it is absurd ; but then our knowledge, how limited ! how little we really know !

There are many things desirable that may not be attainable. Attempts have been made to raise a Blue Geranium, hitherto without effect. Efforts have been made to procure the “Blue Camellia,” but it has not yet come upon the stage, and if our knowledge is not greatly extended, we may safely assert it never will ; but with an enlarged knowledge of natural laws, we should possess a power, of which, under our present circumstances, we can form no adequate conception. Nature is full of secrets. All natural phenomena are secrets until they are discovered. These discoveries are not always the result of study or of reasoning. What we perhaps erroneously call chance has often led to great results. The inquiring mind, ever on the alert, observes facts which reason moulds and shapes. Sometimes a secret is developed intuitively, as it were, when all reasoning is at fault. One fact is very certain—an unobserving mind can never expect to fathom the secrets of nature, or even to comprehend what other minds may observe and explain. Wherever the mind is given to application, the attainment of knowledge is sweet. Whether it comes as the result of thought and reasoning, by instinct, or by chance, the pleasure derived from its acquisition is sweet, and its possession a power.

But our subject has been forgotten in following some thoughts on its attainment. A great question arises—Are the laws of Nature immutable, or are they capable of being moulded to suit the wishes and wants of man ? I do not mean simply developing natural agents, such as converting water into steam, for instance ; neither would we think of the art of the alchemist, or of the philosopher’s stone. Yet we do think there are vast resources attainable which have never been reached or even dreamed of—great secrets to be opened which will give us power to penetrate still farther into the regions beyond ; for we hold it as simply absurd that man, as man, can ever attain to all knowledge.

S. X.



CALADIUM METALLICUM.

THIS plant, better known by the synonym of *Alocasia metallica*, ranks amongst the most useful of stove fine-foilage plants. When well grown, and red-spider kept away, a good specimen is a telling object, and more especially so when a crop of young leaves has just developed—the metallic hue of the foliage is then most chaste and beautiful. Its culture is extremely simple : cutting the stems into bits

half an inch in length, and no more than just buried in an open sandy compost, renders its propagation in any quantity a very easy matter. The eyes, of course, require bottom-heat to start them quickly; the tops of the shoots make plants very much more quickly than the eyes do. Let us suppose a plant has been struck in a 5-inch pot—if the shoots are strong and the leaves large, a 6-inch pot would be better—which pot has been about half filled with drainage, and the compost well permeated with roots; then prepare an 8 or 9 inch pot by inverting a 3-inch pot over the hole in the bottom, and fill more than half-way up the pot with crocks; place a layer of the turfiest part of the compost over these, and the pot is ready for its occupant. In potting, keep the collar of the plant at least level with the rim of the pot, rounding it off to $\frac{3}{4}$ of an inch below the rim at the sides. The compost most suitable is the most fibrous turf, and the same quality of peat if come-at-able, in equal proportions, and used in lumps, with a free admixture of coarse silver sand; bits of charcoal and a few half-inch bones mixed with it will be of advantage. If the aim of the cultivator be to get up a large specimen in the shortest possible time, keep the plant in a warm stove, constantly syringed to keep down red-spider, which affects it, and the roots in a moist condition. When another shift is required, put it into a 12-inch pot, filling it well up with drainage, and potting after the same manner. A 15-inch will be a suitable-sized pot for another shift. If this size be fixed on as the largest pot the plant is to occupy, dressings of the same as the compost used for potting will be found useful at intervals. Those who are fond of using manure-water will find this a subject that will, when it has well filled the pot with roots, put away almost any quantity. Young fresh-grown plants in 6-inch pots are useful for furnishing vases, or other room-decoration.

The same treatment will be found suitable for *Anthurium Lindenii*, *Scherzerianum*, &c., *Maranta Veitchii*, and others. *Alocasia Macrorhiza variegata* does well in the same compost, though a larger proportion of turfy loam is better for this plant than would be safe to use for the others. If there is any secret in the successful culture of these plants, it is to be found in using a compost thoroughly open, and giving, so to speak, unlimited quantities of water when once they are in full growth at root.

R. P. B.



PINK CARNATION SOUVENIR DE MALMAISON.—We have received from Mr Wm. Young, Edinburgh, a most beautiful pink variety of this fine pot Carnation. It is the same as the common variety, but of a lively pink colour and very sweet.

THE ROYAL GARDENS, KEW.

THE Royal Botanic Gardens at Kew are always interesting, no matter what particular season of the year we may select for a visit, but just now they are specially attractive, when every twig is set with emeralds, or bursting into vernal freshness and beauty. There has been a deal written and said about a National School of Horticulture, and here we find the nearest approach to that desideratum at present existing in the British Islands. The young gardeners employed at Kew possess facilities for acquiring knowledge not to be found in any other establishment in Britain. It is, however, something more than a training school for youthful horticulturists, it being one of the most popular public gardens near the metropolis. Here rich and poor may ramble with equal freedom over the fresh green turf—inhalé the delicate odours of the flowers—or listen to the feathered songsters that warble their sweet melodies in nearly every tree. Here may the unlettered son of toil find agreeable relaxation and repose while gazing on the rare exotics of every clime; here may we all gain more or less knowledge according to the light that is within.

Having an hour or two to spare, and being in the vicinity of the Gardens, we thought we could not do better than look over the collections, noting down the plants that most interest us for the benefit of our readers, many of whom may not have the opportunity of seeing for themselves. Entering by the Cumberland Gate we make our way to the Orchid-houses on the right. Here we find the curious little *Dendrobium linguæforme* in full flower. This pretty species is a native of Australia, and bears twenty or thirty of its long-petalled white flowers on a slender spike eight or nine inches long. It grows well on a block, producing its fleshy foliage at short intervals along a creeping rhizome, and healthy plants bear a profusion of delicate, fairy-like, scented blossoms. *D. litiiflorum* is also flowering very freely, bearing an abundance of its deep violet, purple, and white flowers. Another species of this beautiful genus, *D. secundum*, bears lateral spikes of bright rosy flowers rather densely arranged, and though it is very pretty, is scarcely showy enough to attract the notice of amateur collectors. The same remarks apply with equal force to the dingy, greenish-flowered *D. macrostachyum*. A nice little plant of the beautiful *D. Farmerii* bears a solitary spike of white flowers delicately suffused with pink of the softest possible shade. Amongst the *Odontoglossa*s we find *O. maculatum*, *O. Pescatorei*, *O. nebulosum*, *O. cristatum*, and *O. constrictum*, in flower. These plants are of the easiest possible culture, all they require being an open well-drained compost of fibrous peat, moss, and sand, a layer of living sphagnum moss on the pot-tops, and a plentiful supply of water when growing, which is pretty nearly all the year round. They will luxuriate in a cool pit all the summer months, with air on both day and night, due precautions being taken to avoid cold draughts. *Epidendrum bicornutum* was also in flower, and is one of the best species in this extensive genus. Its pseudo-bulbs vary from six inches to about a foot in length, and are leafy towards the apex. The flowers are borne on an erect terminal spike five or six inches high, and seven or eight large flowers are borne on strong spikes. The flowers in shape remind one of *Eucharis amazonica*, the sepals and petals being pure white. The dagger-shaped lip is white, with a few purple dots near its bilobed crest. We saw this plant flowering very profusely with Mr Jas. Anderson, at Meadowbank, about this time last year, and consider it one of the finest Orchids grown. We now come upon another batch of *Dendrobies*, which we will describe separately. *D. japonicum* bears its two or three flowered clusters on pale leafless bulbs about a

foot high, and though not showy, is worth a place on account of its grateful perfume. This species has white flowers with a green hairy spot on the discal portion of the lip, and is very closely related to *Dendrobium candidum*, a plant with similar coloured flowers, but only half the size of those borne by this species, though as many as five or six are frequently borne on a short lateral spike produced near the apex of its slender pseudo-bulbs. *D. tortile* has showy flowers borne in a similar manner to those of the old though beautiful *D. nobile*. The petals are of a bright rosy lilac, slightly twisted like a cork-screw, hence its specific name, and having a pale primrose-coloured lip. *D. primulinum* bears a few of its deliciously-perfumed flowers on thick pendulous pseudo-bulbs. The sepals and petals are of good substance; lilac streaked with rosy purple, the lip being of a faint lemon-yellow or straw colour. A fine specimen of the rare and interesting Australian *D. Kingianum* was producing its three or four flowered inflorescence of rosy purple flowers on slender terminal spikes. A great plant, of some species of *Cyrtopodium*, bears a long branched spike of yellow flowers heavily blotched and spotted with brown, and is remarkable from having the bractæ coloured like the floral segments. We noticed the old *Epidendrum cochleatum* flowering very freely. This plant is interesting as having been one of the first epiphytal Orchids introduced to this country. Several fine healthy plants of *Phalænopsis* were in flower, including *P. rosea*, *P. amabilis*, *P. grandiflora*, *P. Luddemanniana*; and near them a healthy batch of *Nepenthes* seemed quite at home. The slate stage beneath these plants was covered with a layer of fresh green moss, a substance admirably adapted for holding moisture, and preventing aridity, the ill effects of which almost every plant-grower knows by experience. In addition to the above there are many unattractive small-flowered Orchids—that is to say, unattractive to an ordinary observer. Amongst these may be noticed *Eria rosea*, and the dull purple-blossomed *Stelis muscifera*, flowered and figured by the Loddiges at their renowned establishment at Hackney many years ago; also its congener *S. micrantha*, together with *Liparis rostrata*, a curious but unattractive species allied to our common British tway-blades. Passing onwards we notice the *Victoria regia*, with leaves no larger than tea-saucers, already occupying its place in the Lily tank. At one end of the Lily-house is a fine plant of *Vanilla* in robust health. This has flowered freely, and bears a cluster of its fragrant fruit. Some of our readers will remember that Mr E. Bennet was very successful in growing and fruiting this aromatic plant when at Osberton, Notts.

In the Erica-house we notice *Aponogeton distachyon* flowering very freely in a large bell-glass. This is a very interesting hardy aquatic from the Cape of Good Hope, and deserves to be more extensively grown either in tanks out of doors or in cool ferneries, wherever there is convenience. It grows very luxuriantly in the "aquatic" pond in the Botanic Gardens, Edinburgh, and bears a profusion of its white flower-spikes. In this house we also note an arborescent *Geranium*, *G. anemonæfolium*, forming single stems a foot or more in height, having a symmetrical head of finely-cut palmate foliage, and bearing a profusion of its bright purple flowers on great branched panicles. This is a very effective plant when well grown, and we have noticed some fine well-flowered specimens in the Birmingham Botanic Garden. Another arborescent plant, *Oxalis crassa*, is very remarkable, its ternate leaves being borne on a caudex five or six inches high. The leaves of this plant are thick, and have a superposed layer of air-cells, which gives them an appearance similar to the foliage of *Mesembryanthemum crystallinum*. The flowers are yellow. *Sonchus platylepis* is a very ornamental plant, with lanceolate, pinnatifid, glaucous leaves, arranged

very symmetrically; but its flowers give it a weedy appearance. In this house are also grown a few choice Alpines, and some bulbous plants, as *Hœmanthus*, *Ixias*, *Lachenalias*, and various other old-fashioned though beautiful plants, now sadly too much neglected by amateurs. On leaving this house we are attracted by a low tree of *Pyrus spectabilis* on the lawn. This is flowering very freely, and is a pretty object, bearing rich rosy flowers, and a profusion of crimson buds admirably set off by its fresh green foliage. The Succulent or Cactus House we always consider one of the most interesting structures in the garden, filled as it is with a collection at once rare and unique. The first plants that engage our attention are some of the Australian Liliaceæ, such as the *Dianellas* and *Arthropodiums*. The *Dianellas*, at present in flower, are *D. strumosa*, *D. divaricata*, *D. Tasmanica*, and *D. longifolia*, all having long grassy leaves, and panicles of bright-blue flowers. These flowers will be succeeded by a crop of blue berries about the size of small peas, and last for a long time in beauty. *Arthropodium serratum* bears lax spikes of 6-parted white flowers, having the filaments curiously thickened for half their length, the enlarged portion being of a faint lilac colour, and having two golden-yellow horns at the base, which curl upwards towards the anthers. This species has bright-green strap-shaped leaves, and is very ornamental. A plant somewhat similar in appearance is *Libertia formosa*, a member of the Iridaceæ, bearing white flowers on a spike two feet high, the leaves being bright green, and grasslike. *Oldenburgia arbuscula* is a very rare plant, a native of South Africa, and very ornamental. Its young leaves are covered with a dense tomentum, which reminds one forcibly of the *Salvia argentea*, or *Stachys lanata*, sometimes used for edging purposes in the outdoor garden. The lower leaves are of a bright and shining green colour. Amongst the grand collection of Agaves, *A. densiflora* was in flower, bearing a dense spike of lurid flowers about 6 feet high. In this house two or three species of *Asparagus* are grown as climbers, and have a very elegant appearance. One or two species are well worth growing for furnishing elegant sprays of green foliage, very suitable for bouquet-work. One of the rarest plants in this house is the extremely handsome *Dyckia argentea* (Hart), one of the rarest and handsomest of Bromeliads. Its epinose leaves are nearly two feet in length, and recurve very gracefully, giving a globular outline to the plant. It flowered in the Kew collection in 1871, but its flowers are by no means showy, still the extreme grace and beauty of the plant itself makes ample amends for this defect. *Vellogia* (*Talbotia*) *elegans* (Oliv), is a very rare and interesting plant, having bright-green foliage six inches long, and nearly one inch in width. The flowers are white with golden anthers, and remind one of those borne by *Triteleja uniflora*, though happily they have not its objectionable alliaceous perfume. Several species and varieties of *Phyllocactus* are in flower, and are very showy, though rather fugitive. Leaving the Succulent-house we enter the greenhouse, gay with spring-flowering plants, bulbs, and some nice pots of *Lachenalia tricolor*. One of the first objects to attract the visitor's attention, is a plant of the Australian *Clianthus puniceus*, trained up the rafters. The foliage of this is fresh and green, and it bears a profusion of its rich crimson blossoms. Here we notice plants of the old *Sparmannia Africana*, a souvenir of Captain Cook's second voyage round the world. This is a very valuable decorative plant for small pot work, as it can be freely propagated from cuttings of the young wood in the spring, and these cuttings will flower the succeeding winter in forty-eight pots. This plant is also a botanical curiosity, having sensitive stamens, which expand on being touched, this action differing from that observable in *Berberis*, where the stamens are already expanded in the open flowers,

and rapidly contract or close round the stigma on being irritated. Here also may be noted *Arctotes grandiflora*, a large-flowered composite from the Cape, also *Othonna pectinata*, a very profuse golden-flowered asteraceous plant from Honduras. The stems of this plant are terminated by finely-cut foliage of a silvery or glaucous tint, and its flowers are borne on slender peduncles about six inches long. This last is a good companion to the white-flowered *Chrysanthemum frutescens*, a valuable winter-flowering decorative plant, far too much neglected by horticulturists. *Hardenbergia monophylla* was flowering very profusely, trained up the rafters as a climber; and the same remark applies to *Lonicera sempervirens*, one of the Honeysuckles, bearing clusters of bright coral-red flowers admirably set off by foliage of the freshest green colour imaginable. Glancing through the Fern-houses, which are in admirable condition, we took our departure to the great Palm-house, where the "princes of the vegetable kingdom" hold their court. These specimens are simply magnificent, towering upwards in their vigour, and in some few cases intimating that the house, large as are its proportions, will soon be too small for them. Here we notice several plants of the noble *Crinum ornatum*, bearing great white flowers tinged with rose on the apex of scapes, 3 to 4 feet high. This plant has long, strap-shaped leaves, and when bearing its umbels of lily-like blossoms, would form an effective ornament for the conservatory. A plant of *Bromelia sceptrum*, having long, dark-green, epinose leaves, bears a large erect cluster of golden-yellow fruit as large as pigeons' eggs. Another plant deserving of special notice, on account of the striking beauty of its young leaves, is *Carapa guianensis*. The young foliage is arranged in a plumose manner, and is of a bright-crimson colour gradually shading off to bright green as it becomes older. The fine specimens of *Encephalartos horrida* and *E. caffer*, together with the curious orange- and -purple-flowered *Strelitzia reginæ*, are worthy of notice, being noble ornaments to the plant-stove or tropical conservatory. Leaving the Palm-house, we walk through the Temperate House, or Winter Garden in the pleasure-grounds, with its noble specimens of *Dicksonia*, *Cyathea*, *Todea*, *Eucalyptus* or Blue Gum-trees of Australia, and *Araucarias* which tower upwards to the very roof. Here are also some fine plants of *Rhododendrons* from the Sikkim Himalayas, which bloom profusely during the spring months. This house is one of the most interesting in the gardens, and is neatly laid out in numbered oblong beds and gravel walks, most of the specimens being planted out.

Having had a stroll through the Arboretum or Pleasure-grounds, and noted the new operations now being judiciously carried out, we left the garden and seized the opportunity of having a little chat with the veteran ex-curator John Smith, Esq., A.L.S., whose useful life ought to be recorded *in extenso*, if only for the encouragement of aspiring young horticulturists. Mr Smith is a native of Scotland, and came to Kew during Aiton's time. Here by perseverance and ability he rose to the honour of the curatorship—a post which he filled with credit to himself for over forty years. With these few remarks, we close this short notice of a two hours' ramble through our National Botanic Garden—a ramble that has once more taught us how much we have yet to learn.

F. W. BURBRIDGE.



CHEMISTRY IN CONNECTION WITH HORTICULTURE.

BOTANY is the science which gardeners generally identify as the one pre-eminently connected with gardening. In one sense, botany is a "gardener's science" before all others; but I question if botany can lay claim to our notice as being of as much practical value as chemistry. Botany, chemistry, and geology are, properly speaking, different branches of one division of natural philosophy, and to thoroughly understand any one of them, one must have a certain knowledge of the other two. One cannot be a thorough botanist without knowing the chemical components of the plants he studies; one cannot be a thorough geologist without knowing to what order or class to refer the fossilised plants which his science has discovered; and one cannot be a chemist without having plants, and rocks, and minerals to operate upon.

It is with a view to draw the attention of gardeners like myself (just entering, as it were, into real gardening life), to chemistry, that I have written this. I lay no claim whatever to be a chemist myself, in any sense of the term, only I hope I know enough to see the importance of a clearer, deeper knowledge of the science.

There has often been pressed upon the attention of gardeners, especially young gardeners, the necessity of some mental cultivation, in order to prevent our intellects—like our gardens—from running rampant with confusion—worse, noxious weeds. There are differences in intellects, just as there are differences in soils; but, as almost any soil can by cultivation be made to "bloom and blossom as the rose," so, in like manner, can the intellects be made to bloom and blossom, or, neglected, become the nursery-bed of noxious weeds, not only ruining the possessor, but spreading seeds of ruin all around.

It is as a means of cultivating the mind that I recommend the study of chemistry; and not only so, but as a means of profit, for a thorough knowledge of the elements of this science will fit the possessor for a higher position in life than the man who knows nothing whatever of its teachings.

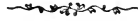
It is that we may become better gardeners that I recommend it; for, be it borne in mind, that it is given to few to excel in more things than one, therefore the thing we should excel in is gardening; so, while cultivating our minds in the study of science, let us select those sciences which will help us on our way to perfection in that profession of which we are representatives.

With our worthy Editor's permission, I will, at some future time, indicate a few points in horticulture where a knowledge of chemistry would revolutionise the daily operations of not a few.

In conclusion, let me say that I address myself "principally to you

young men," for it is we who one day will be called upon to "tread the road our fathers trod;" and we should strive to do better than those who have "gone before," seeing we walk in times when science has thrown a clearer light around the occupations of our everyday life.

UNDER-GARDENER.



COMMON SHRUBS FOR COVERING AND ORNAMENTING THE WALLS OF HOUSES.

It is often very interesting to observe some of the various modes which modern ideas have adopted in the way of variety, and even usefulness in many instances, to make screens of different shrubs, and even to ornament the walls of cottages, and the residences of many of our merchants and manufacturing gentlemen. Of course there are the old baronial mansions covered with time's mantle of everlasting Ivy. Few plants, if any, are better suited for covering the walls of such houses, giving an ancient, and even a venerable, appearance to them, which is not to be seen nor expected about more modern erections. However, to have Ivy to look well upon the walls of any residence, especially during summer, and in the neatest way possible, where everything else is kept and dressed in the trimmest manner, it is very essential to trim it during the month of April. The usual mode of doing this is with a reaping-hook or some such weapon, to slash off all the fore-shoots and leaves from the Ivy. However, this way only partially removes the litter, as most assuredly all the footstalks of the cut-off leaves will fall off, and that, too, ere the month of June has passed away. To obviate this I have on various occasions pulled every leaf off by hand, footstalk and all; thus doing all we could to prevent any littery mess during summer, while everything else was in the best of trim, and wearing a smiling appearance.

The following are only a few of the plants we have seen used for covering walls with, and very successfully, of what we may term common shrubs. To some minds it seems not a little strange to see the pleasing effect which some shrubs make when used to cover walls, especially when judiciously managed; some people like those plants that are evergreens for this purpose. Many plants are highly ornamental when full of leaf and flower, while during the long dull months of winter they are often like so many dried hazel sticks; however, the few which we here enumerate are very useful and ornamental.

Amongst evergreens which we have seen used to ornament the front walls of dwelling-houses and garden-walls, &c., may be named Irish Yews, Common Yews, *Arborvitæ*, *Cotoneasters* of sorts, and *Pyrus Japonica*.

The first time we saw Irish Yews used for this purpose the effect was very much admired, being studded all over with its reddish fruit, thus greatly relieving its somewhat sombre appearance. The Irish Yew has a very pretty appearance, if a good healthy plant, growing in good soil and well drained, when managed well from first planting. On laying every plant off regularly into its proper position, and trimming off every superfluous shoot, there should not be the least overcrowding of the branches at any place, more than is necessary to give proper effect. To those who may not have seen Irish Yews used for this purpose, I would say, give them a fair trial before forming an opinion of their merits.

Arborvitæ are sometimes used for this purpose, requiring much the same kind of treatment as Irish Yews. When judiciously managed, these two associate well upon the same wall, and can be made to form a covering of about equal thickness. However, the Arborvitæ have a very ferny-like appearance—that is, when they are nicely trimmed and well fastened against a wall. Their little fore-shoots or branches, of from 4 to 8 inches long, often remind one of the tip of the fronds of the Fern *Filix-Mas*, or the common Bracken (*Pteris aquilina*). These two, when well managed, have nothing of a coarse appearance, nor do they run long stretches, leaving some places naked, as many plants are liable to do.

Cotoneaster microphylla makes an excellent cover for a wall. We have seen a plant of it covering a wall 4 yards wide by over 5 yards high. This plant gives a greater variety of change with the seasons of the year than either the Yew or Arborvitæ. It can seldom be trained to have anything like the same loose graceful appearance, not covering the wall so thickly as the two first named. However, its close and generally very regular flowering habit during summer, and being all studded over during the dull winter months with its lively reddish berries, makes it a very valuable plant, adding variety and interest as the season changes.

Cotoneasters are, when planted into a shrubbery or in a border, generally very straggling, and far from neat growers; but they are well suited for a wall when well attended to, and kept well fastened up.

Pyrus Japonica is a far more coarse-growing plant than either of the above, and seldom can be made to show such a neat appearance; but when once well established, it sometimes has an interesting appearance. Where it is required to give a covering and a pleasing effect upon any wall, it would be far better to plant them pretty close together—say at about from 2 to 3 yards apart—thus requiring fewer branches trained off right and left, and consequently their natural vigour will carry them higher up the wall. Many others are very suitable when attended to by one who knows how to manage them.

The smaller-leaved and closer-growing plants are preferable to strong coarse-growing kinds, but in every case let them have suitable soils to grow in. Good drainage is very essential. G. DAWSON.

CELERY IN POTS.

MR TEMPLE, in the 'Gardener' for June, warns us of some of the difficulties attending Celery-culture in pots. He says Celery has been grown in pots for many years; if grown successfully, all the more reason why "Under-Gardener," or somebody else, should give the system publicity. Some years ago, your (I might say our) esteemed correspondent, "The Squire's Gardener," wrote an article on herbaceous bedding which drew a great deal of attention at the time. Had "The Squire's Gardener" looked in upon Mr Noble, the veteran gardener at Bonnington, he would have seen the system brought to a degree of perfection which, judging from his article, he little dreamed of. It made its mark, however, and helped to create a demand for many good plants which had been previously neglected.

Mr Temple says, "if 'Under-Gardener' could look in upon some growers for exhibition he might see Celery in pots," &c. If Mr Temple could have looked in here while writing, he would have seen Celery in pots to be planted in trenches in June for use in August. Yet we are not going to take a wrinkle from "Under-Gardener." Mr Temple says he never had any difficulty in keeping Celery, &c. To this it is sufficient to answer that others have. Further, he says, "deliver me from watering a supply of Celery, say from 2000 upwards." To this we heartily respond, but half of that number is far above the average grown by the majority of the readers of the 'Gardener;' besides, it is only part of the crop that is recommended to be grown in pots.

For those who grow for exhibition, or a more important class still, those who have to bring forward a supply to be fit for use by 1st August, a good system is to grow in shallow trenches in double rows, each plant tied up slackly with moss, or, where moss is plentiful, it might be laid round it like earth; but previous to using, it should be steeped a few hours in water with a handful of salt in it, to make it uncomfortable for worms. BRIGHTSPADE.

LIKE the children, I have a natural antipathy to being left out in the dark, "all alone." I was half afraid I was going to be so in this case; but, thanks to Mr Temple, I am not, as I thought, all alone in my idea of growing Celery in pots.

He says it may be a new method to *some*—as much as if he had said, although it may be a new thing to “Under-Gardener” it is not so to me—and then goes on to say that if I would look in upon some growers FOR EXHIBITION I would see Celery in pots. Quite true; but that is not the idea I started. It was to keep up a winter and early spring supply where failure was the rule in the open trenches; and I must say, that if Mr Temple had succeeded in keeping up a supply through the winter in Scotland, he would have been far more successful than the majority of gardeners. The whole tone of Mr Temple’s letter is simply against the idea of growing a *supply* in pots, as well as to make-believe that the thing was common enough. It is a common thing for exhibitors to grow Leeks in pots, but that is not the same thing as growing a winter’s supply in pots; and were anybody to suggest the plan of doing so, wouldn’t it be “new”? only there is no use growing Leeks in pots, for the simple reason that they are better outside. But it is different with Celery, for reasons stated in my first paper on the subject, which, if carefully looked over, will show any one that the reasons were given clearly; and, indeed, Mr Temple has not ventured to say that my reasons were insufficient, and the only unsurmountable difficulty he points at seems the watering. Well, I confess that is the one point where the method will involve more labour than the way commonly practised; but, taking one thing with another, I am perfectly satisfied that, to keep up the supply, the one method will take no more trouble than the other.

I recommended the method to amateurs; and what amateur would require 2000 to supply his wants from Christmas onwards? and where that number is required, there are generally appliances reducing the trouble of watering to a minimum. Say, for instance, where bedding plants are hardened off, there are generally water-pipes and hose; and I have even seen, at an amateur’s too, a water-pipe laid along the top of a wall with jets in it for watering hard-wooded greenhouse plants which stood at the bottom of said wall through the summer, and all that was required was to turn on the water, when the jets commenced showering, watering the plants effectually overhead and in the pots too.

I don’t say that the method I recommend surpasses the old except in this,—with your Celery in pots you are independent of the weather, for you can stow them anywhere you please, provided it is safe from frost and damp, and various means could be employed to retard them in spring which may be impracticable in trenches. I am still convinced that it is practicable, and more, that one day many will practise it as the superior plan.

UNDER-GARDENER.

VISIT TO JAPAN.—GARDEN CULTURE.

TO THE EDITOR OF THE 'YORKSHIRE GAZETTE.'

TOKIO, Nov. 14, 1872.

SIR,—According to promise, I will continue my description of Su-mae-Yah. On entering the gateway of one of the gardens you generally come on a pretty little winding path leading up to the gardener's house, which is usually situated near the centre of the garden. On both sides of the walk specimens of the hardy ornamental trees of the country are planted, many of which are dwarfed or clipped into round table forms. The Yew (*Taxus cuspidata*) is one of the principal; but there are different species of Thujas, Retinosporas, and Pines duly represented. Plants cultivated in pots are usually placed near the gardener's house, or put under a shed of bamboo-work. He protects his tender plants in rooms, which are fitted with shelves, in the winter months. Glass-houses have not yet been built. Among these plants you will find the Cacti, Aloes, Fuchsia, &c.

Dwarf plants are greatly esteemed by the Japanese, and they are wonderfully clever in making miniature gardens. I have seen a porcelain flower-pot, 7 inches square by 3 inches in length, in which was actually growing two fir-trees, a fruit-tree, and a bamboo. The trees and plants generally chosen for dwarfing are Bamboos, Plum, Cherry, Pines, Junipers, and Thujas. I will endeavour to give your readers a description of the art of dwarfing trees, which I have learnt. It is one I always had a great interest in when in England; and finding the Japanese plan quite different from our English one, it will no doubt concern your readers. In the East the art of dwarfing trees is based upon one of the commonest principles of vegetable physiology. Their practice is perfectly correct, and would astonish some of our cleverest horticulturists. If they can, by the means they adopt, check or retard the flow of the sap in the trees, they prove that the formation of wood and leaves is likewise retarded. This they do by confining the roots in a small pot, withholding water, and training the branches into any design they wish. They generally bend the main stem into a zigzag form, which checks the flow of the sap, and forces the side branches out of the stem, where they are most required. The pots in which they are planted are narrow and shallow, holding a very small quantity of soil, and only sufficient water is given to keep the plant alive. When the new branches shoot they are tied down in various ways, and twisted into any design the gardener wishes. All the strong ones are cut off, and every means is adopted to discourage any young shoots possessing any degree of vigour. Nature, as a consequence, struggles against this mode of treatment for a time, until she quietly yields to the power of the gardener. Care is taken to prevent the roots getting through the pot into the ground, and also the supply of too much moisture; as, if it received moisture, the plant would recover its original vigour, and the endeavour of the gardener be frustrated. Plum-trees generally flower quickly by this treatment. I have in my drawing-room two specimens of Orange-trees, with at least forty oranges on, although neither of them is above two feet high. On a future occasion I will give your readers some account of the silk manufacture.—Yours truly,

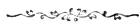
J. TASKER FOSTER.



SPINACH.

WHEN sowing our last piece of winter Spinach, we had not enough of the Prickly to sow what ground was required, as we are expected to have it every day in the year. The ground was finished with the Round-seeded or Summer variety. This was on the 3d September. It all came up at the same time, and for about two months little difference could be seen ; but as the weather got colder, the Prickly shot ahead a long way, and from it we were gathering long before the other was ready. As soon as the days began to lengthen, the Round variety, which had done little all winter, made a start and grew very fast, soon getting far before the Prickly, the leaves being large, thick, and fleshy. It has also stood longer without running to seed than the other ; and now, 12th June, we could pick quantities if required : but all will have to be cleared to make room for other crops. I am not aware that the Round variety has been tried for winter, but it has done so well this spring that I mean to sow again for next spring.

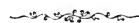
A. H.



ANTHURIUM SCHERZERIANUM.

SIR,—At Salisbury Green, the beautiful seat of William Nelson, Esq., a magnificent specimen of the above may be seen. At present it grows out of a 14-inch pot, and 47 of its spathes are adorned with flowers. Mr Currie, chief gardener, informed me that he purchased it five years ago, and at that time it grew out of a 3-inch pot ; so its growth, during the period that has elapsed since its obtainment by Mr Currie, has been all that could be desired. If any of the readers of the 'Gardener' have ever seen such an excellent specimen of the *Anthurium Scherzerianum* as the one to which I have referred, will they be kind enough to say so.

S. W.



REVIEW.

THE ART OF GRAFTING AND BUDDING. By Charles Baltet. William Robinson, 37 Southampton Street, London.

A volume of over 200 pages devoted to grafting and budding by a Frenchman of great experience in the art. It is a translation of M. Baltet's *L'Art de Greffer*. The object of grafting and the conditions of its success, the proper season, and the methods of grafting, are all very minutely and clearly treated of. Indeed, from the numerous wood engravings with which the subject is illustrated in all its details, the merest novice may see at a glance how all sorts of budding and grafting are performed. It is the most perfect work on the subject which has yet appeared, and we recommend it to all who are interested in it,—and that includes a wide range.

TEMPERATURE at CLUNY CASTLE GARDENS, ABERDEENSHIRE, from May 1 to May 31, 1873.

Height above sea-level, 280 feet; distance from sea, 17 miles.

		Max.	Min.			Max.	Min.
May 1,	. .	60°	45°	May 17,	. .	43°	30°
" 2,	. .	62	43	" 18,	. .	45	28
" 3,	. .	47	35	" 19,	. .	53	24
" 4,	. .	52	30	" 20,	. .	51	25
" 5,	. .	44	35	" 21,	. .	67	45
" 6,	. .	44	36	" 22,	. .	59	44
" 7,	. .	51	40	" 23,	. .	54	40
" 8,	. .	48	39	" 24,	. .	59	36
" 9,	. .	56	35	" 25,	. .	63	39
" 10,	. .	49	40	" 26,	. .	55	35
" 11,	. .	59	41	" 27,	. .	53	38
" 12,	. .	51	38	" 28,	. .	59	34
" 13,	. .	54	36	" 29,	. .	61	33
" 14,	. .	49	37	" 30,	. .	63	33
" 15,	. .	46	36	" 31,	. .	69	28
" 16,	. .	49	29				

Wind almost constant from E., N.E., and N.

A. M'D.

Calendar.

KITCHEN-GARDEN.

THE removal of crops used up, or nearly so, will now require prompt attention, so that the space may be manured, sown, and planted. An effort should now be made to get every available space well filled for winter supplies. Walcheren, Granger's, Snow's, Knight's Protecting, Carter's Champion, and Gordon's Broccolis, are among the best to give a succession of crops up to May or June: and systematic arrangements should be made so that each kind may be planted to follow the other in succession, avoiding small patches of ground becoming vacant in the midst of large breadths which are to turn in at a later date. Broccoli may be planted in rich ground from 2½ to 3 feet apart. Seldom are good heads had when the plants stand under 2 feet from each other. Kale and Brussels Sprouts should be planted in abundance, as they are two of the hardiest and most useful of all the Brassica race, and often give good supplies when Broccolis are destroyed. Plenty of Cabbage or Coleworts planted now will be useful in autumn. Sow seed for early spring Cabbage about the middle of the month for the north, and towards the end of

the month for the south. Clear off all refuse from Cabbage which have been cut, and give a mulching to keep them in active growth, if they are to supply heads in autumn and winter; but young plantations are generally most satisfactory. Hard heavy clay-land to be planted or sown should have a watering the night previous, and it will break down like powder when half dry. Give the plants a good soaking when they are planted, should the weather be dry. Surface-waterings repeated keep the roots near the drought, and they are destroyed, thus making the plants stunted. Half-watering is worse than none at all. Early Celery will now take almost any quantity. When a good breadth of early Potatoes is lifted, sow Turnip for autumn and winter supply. Spinach may be sown between newly-planted Broccoli, Cauliflower, or other crops; thus saving useful ground, and doing no harm to the remaining crop. Sow a good breadth of Lettuce. Thin out crops a foot apart, and plant the best of the thinnings in a shady position, to make a succession crop to those standing where they were sown. Endive may now be sown on good

ground. Sow plenty of small Salad, and Radish of sorts; Turnip kinds answer best at this season. They may be sown among other crops, or under the shade of bushes. A mat or other covering placed over the seed, keeping the ground moist, will be a safe method of getting the seeds to vegetate on dry, hot positions. French Beans may still be sown in the south for a late crop, but in the north only where they can be protected from autumn frost. A good breadth should be placed where a frame can be put over them. When the plants are well established in the open ground, and glass placed over them when there is danger of frost, they will keep in full bearing far into the autumn. Top in Scarlet Runners, whether grown staked or kept dwarf. If they are required to keep on bearing, the Beans should all be picked off before they get old. This applies to all kinds of Beans. Make a sowing of any early kind of Peas, for a chance crop. They should be in a position where the sun does not shine on them early in the morning, as when they are touched with frost they are better to be thawed before the sun shines on them. This applies to French Beans and other tender crops. Asparagus-beds may be dusted with salt, which not only kills the weeds, but helps the growth of the plants. The more vigorously Asparagus is grown now, the finer it will be when forced, or for next

year's supply. Leeks may now be planted on extra rich land, if not done earlier. The main crops of Celery should now be got in without delay. Take up Garlic and Shallots when their tops become yellow. Tomatoes will now require attention, by training, rubbing off laterals, and plenty of water. Expose the fruit freely to sun. Those which have been forced and continue to bear, may be placed on open spaces against walls. Though they bear well in southern districts planted out like Potatoes and staked, they require in the north the aid of a wall, a sloping ridge, with slates placed over it, or some other contrivance to afford shelter and heat. Capsicums and Chilis also require a warm position, and to get them ripened early they require glass and artificial heat. Cucumbers and Vegetable Marrows on ridges, or planted against walls, should have attention to training, stopping, and thoroughly watering the plants. They should be allowed to run freely, and not become matted in the foliage. A good mulching over the roots, especially Cucumbers, will help them much, and save labour. Manure from a Mushroom-bed used in this way often gives good supplies of Mushrooms during autumn. Free open surfaces among all crops will do much to save the use of the watering-pot. The hoe or prong can scarcely be used too freely.

M. T.

FORCING DEPARTMENT.

Pines.—Plants that were shifted to their fruiting-pots in March and April will now be growing rapidly, and filling their pots with roots. Much of the success in connection with this portion of the stock depends on the manner in which these are ventilated and watered. If they are over watered and syringed, and under-ventilated, the consequence will be a soft, watery, immatured growth, that will render them not easily started into fruit when that is required of them. (In many instances Pines have not started satisfactorily this year, owing to the dull damp summer and autumn of last year.) On the other hand, if not sufficiently supplied with water, and too freely ventilated, the result will be a stunted growth that will be very apt to cause the plants to "button," or start prematurely. The medium between such extremes should

be the aim—giving sufficient water through the heat of the summer to keep the soil regularly moist, and sufficient air to prevent their drawing up weakly. Put air on gradually as soon as the thermometer touches 80°, and increase it at intervals, reducing it by degrees also in the afternoon. On bright days dew them over with a fine syringe, but not so heavily as to cause much water to lodge in the axils of the leaves, which has a tendency to produce suckers, and to cause a too soft growth of the leaves. Shut up early in the afternoon, so that for a short time the thermometer may stand at 90° with sun-heat. In the south, little or no fire-heat will now be necessary if the weather be summer-like. But in Scotland it is desirable to put a little heat into the pipes every night to keep the heat at 75° at midnight,

allowing it to fall to 70° by morning. Winter-fruited sorts, such as C. Rothschild, Cayennes, and Jamaicas, that have been rested for the last month by being kept cooler and drier, should now be started by giving them an increase of heat and moisture. These will succeed those that started early last month for autumn supply. All that have bloomed off should be syringed overhead three or four times weekly, avoiding wetting the crowns if possible. These, and other fruit that have not begun to colour, will now take a good supply of manure-water. We prefer guano to any other manure for Pines, and to water with a weak solution every time the plants require water, instead of giving stronger doses occasionally. The early Queens will now be all, or nearly all, cut. Encourage the suckers on these by giving the plants a good watering, and allow them to grow on the plants till they attain size sufficient for 7 and 8 inch pots. But be sure and give them plenty of air along with the increased moisture, or they will be soft and watery. See that any of the young stock requiring a shift are attended to before they become pot-bound; and always pot when the soil is in a medium state of moisture, and pack the fresh soil firmly round the ball. Any fruit not yet ripe, and that are required as soon as possible, may be forced on with a high temperature when it can be derived from sun-heat. The thermometer may be run up to from 95° to 100° for a time after they are shut up, with a corresponding amount of atmospheric moisture, at the same time airing freely by day, or large unsightly crowns will be the result. See former Calendars regarding fruit that are ripening and ripe.

Grapes.—In all vineries where the Grapes are not yet colouring, keep up a good supply of moisture in bright weather by frequent sprinklings of the paths and borders. Shut up as soon in the afternoon as the danger from an overheat is past, giving a corresponding amount of moisture while the heat is high, but putting on a little air for the night at 8 P.M. This treatment is only advisable when the weather is clear and bright, and a maximum of air-giving is necessary by day. On the other hand, when dull, sunless weather prevails, be content with less moisture, as with less heat it is an evil. The temperature should

not be allowed to sink below 75° at night now, and for this end fires may yet be necessary in colder weather in some localities. See that all Grapes swelling off that have their roots in inside or elevated borders are not allowed to suffer for want of water in seasons of drought. Give them a thorough soaking of manure-water, and then mulch with half-decayed manure or leaves; and if dry weather prevails, examine the border thoroughly in 14 days after, and if dry, and inclined to crack, give another watering. Of course this should be discontinued when the Grapes are ripe, adding slightly to the mulching the last watering. Vines in similar borders should not be neglected after the fruit is all cut. Many Vines are semi-starved in dry seasons after the fruit is cut. Keep the border moderately moist, so as to keep the foliage healthy till rain comes. Keep ripe Grapes cool and airy, and examine the foliage; and if any red-spider exists, get rid of it at once. Dryness at the root and red-spider generally go hand in hand, and are both very injurious to Vines, inasmuch as under their influence the foliage gets destroyed, falling off prematurely; and the result is seriously exhibited the following year. Examine Grapes intended to hang through the winter, and that have been thinned a short time ago, and if they appear too thick of berries, remove them at once. Bunches that get what is called jammed when fully swollen never can be kept successfully. To keep Grapes well over winter they should be thin enough to allow every berry to be exposed to the air. Young Vines planted this season should be encouraged to make as much foliage as there is room without crowding, unless it be supernumerary Vines planted with the view of giving a crop next year, which should not be allowed to make more than one or two lateral leaves, and the main stem should be stopped about 2 feet beyond the length to which it is to be fruited this season. We have planted a quantity of the later class this season, struck from eyes in spring, to be fruited in 1874, placing two in the centre of each 6-foot light, one of which is allowed to run to the top of the house before it is stopped; the other is stopped when little over half-way up the roof. The former will crop the top,

and the latter the bottom half of the roof next year, where one Vine 22 feet long would not do so satisfactorily. It would break very strong at the top, and very weakly at the bottom; but by planting two, as described, the whole length of roof can be cropped without planting in the centre of the house, as is common, and where Vines are in the way more or less. Vines planted last year, and to be fruited next, should not be allowed to make a rambling lateral growth, or the fruiting-buds will be defective. Two leaves to a lateral is sufficient. Pot-Vines intended to be fruited next spring should now be strong, and changing to brown at the bottom. Do not allow these to make lateral growths, except a few at the top, to prevent the main eyes from starting. Give them a good supply of manure-water, and full exposure to light, so as to make sure of strong, well-matured canes.

Peaches.—Fruit that are ripening should have an abundant supply of air night and day. If any are shaded by the leaves, push the latter aside so that light can reach the fruit, or it will not colour properly. If to be packed and sent to a distance, the fruit should be picked a day before it is quite ripe. They carry more safely, and can be kept a longer time when such is necessary. All trees from which the crop is gathered syringe freely every fine day to keep the foliage healthy to the last, and give to old trees a good soaking of manure-water immediately the crop is all gathered—*i.e.*, if the border is dry—and cut out at once all wood not required for next year's crop. If the house requires painting or any repairs, now is a good time to see to such, when the lights, if movable, can be removed with impunity. Crops swelling off should be encouraged with waterings and mulchings of manure, and daily syringings when the house is shut up. Any amount of attention should not be considered too much to keep red-spider at bay, and the foliage healthy to the last. Avoid crowding in too much wood in the cool houses which generally have the worst chance of getting well-ripened wood.

Figs.—Where the fruit are showing signs of ripening, cease syringing, and keep the house airy and dry. A well-ripened Fig is a splendid fruit, but a watery insipid one is the very reverse. Do not gather them till they have

cracked and the juice begins to ooze from them, unless, indeed, when they have to be packed and sent to a distance, when it is necessary to gather earlier. When the first crop is all gathered, give the trees a liberal watering of dung-water, and resume the syringing and a moist warm atmosphere, so as to encourage the swelling of the second crop. In the case of young trees inclined to make a too gross growth, do not apply any manure, and give less water at the root than to old free-bearing trees. Plants in pots should be mulched with strong manure and turfy loam, and freely watered and syringed.

Melons.—Much more water will now be required by those swelling their fruit than is necessary early in the season. Give thorough soakings at longer intervals instead of frequent surface-dribblets. The surface of the beds in Melon-houses, where the plants are trained up the roof, will benefit much by a top-dressing of horse-droppings. Syringe every fine afternoon until the fruit begins to ripen, after which give more air and less moisture; but avoid starving the plants. Plant out for late crops, and attend to such as are in bloom by daily impregnating them.

Cucumbers.—Syringe regularly at shutting-up time, and see that, all plants in full bearing are well supplied with moisture at the root. Give those which have been bearing freely for a length of time a rich top-dressing, and do not allow them to bear very heavily for a week or two, and they will soon renew their vigour and bear fine fruit again. Impregnate a few fruit for seed, choosing fruit that show signs of being fine. Look over all free-growing plants every two or three days, and stop and regulate the young growths, allowing no more foliage than is just sufficient to occupy the space without crowding.

Strawberries in pots.—All young layers that are well rooted should be shifted into their fruiting-pots without delay. For early forcing these are the better of being in their fruiting-pots the first week of this month; 5 and 6 inch pots are large enough. Use a rather strong loam, with about a third of well-decayed manure. After potting them, place them in a warm, sheltered place, on coal-ashes or boards, so that worms cannot molest them. In warm dry localities it is a good plan to plunge the pots of those in smaller pots. Give

them plenty of room to develop their leaves properly, keep them free of weeds and runners, and give them a good supply of water. If the necessary stock of plants have not all been layered, no time should now be lost.



Notices to Correspondents.

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in the 'Gardener' to David Thomson, Drumlanrig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to, be forwarded by the middle of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

A READER.—Sow your *Calceolaria* seed about the 12th of August in a pan, using equal proportions loam and leaf-mould, with a little sand. Sow without covering on a moderately smooth surface, and cover with a bell-glass, and shade and keep moist. When it vegetates, remove the bell-glass, and place the pan in a shady corner of a frame or pit near the glass, with plenty of air. Prick off as soon as they can be handled into pans or boxes.

NOVICE.—If you have the command of leaves or tan, or both, hot water is not necessary for bottom-heat, and some of the finest Pines have been reared by the leaf-and-tan-bed system. It will require five or six rows of 4-inch pipes for top-heat. Queens are best for early supply, that is, to start from January to June. Smooth Cayennes, Charlotte Rothschilds, and Jamaicas, are best for winter. Prince Albert is entirely distinct from Black Prince, and is much superior to it.

S. W.—We cannot afford time to puzzle over scraps of plants sent in a letter and smashed under the postman's stamp.

P. R.—We decline advising you. A man who thoroughly deserves advancement is, in 99 cases out of 100, sure to get on. See that the fault does not lie at your own door. Always remember that slovenliness, drowsiness, and inattention are and ought to be ruinous to people, and to gardeners in particular.

AMATEUR.—Examine under the surface of the soil and see that grubs are not the cause of your disaster. Grubs have been most destructive in field and garden this season, and Pansies and Cauliflowers have suffered much.

CONSTANT SUBSCRIBER.—The Silver Variegated *Euonymus*, the Chinese Honeysuckle, and Variegated Periwinkle, are all first-rate hardy edging plants, and bear the knife well. They can be easily propagated from cuttings in August in cold frames or hand-glasses.

VITIS.—You are giving your Vines too much moisture, and not ventilating sufficiently. Keep the air drier, and air freely at top and bottom; it will arrest the progress of the roughness on the leaves. Get W. Thomson on the Vine, and Williams on Stove and Greenhouse Plants.

S. P. L.—Sow bone-meal in your lawn in spring, by which means the grass will be nourished, and it will gain ascendancy over the moss. You might rake some of the moss out with a sharp-toothed rake, and sprinkle some rich light soil over it as well.

M. W.—Sion House Improved, Telegraph, and Volunteer, are excellent winter Cucumbers. Sow about the 12th of August.

L. S.—You cannot do better than you propose, but it should be done immediately.

C. R. W.—Apply to the Secretary.

A SUBSCRIBER.—Fire-heat will not be necessary now, unless during a continuance of dull damp weather, when a little heat will prevent stagnation of atmosphere.

A. H.—You cannot *think* too much in the direction you name. It is folly to think that improvement is not possible. Let us have no stereotyped editions of gardening affairs.

BRIGHT SPADE.—Thanks. Shall be glad to hear from you on any of the subjects you name.

A. C. Cade.—In so mild a climate we do not consider chambering necessary. The depth of soil, if you do chamber, should be 2½ feet. The more the rainfall, the greater necessity there is for draining, of course. Outside borders managed as you propose, are to be preferred to confining the roots to the inside. Late Grapes require least fire-heat, and probably with coals so dear, will suit your purpose best.

MILDEW ON ROSES.—I should feel obliged if you, or any of the correspondents of the 'Gardener,' can kindly give me any receipt to effect a cure of mildew, either on fruit or Rose trees. I begin to think the best is to cut down the tree, and consign it to the rubbish-heap; for I find a tree once badly attacked is liable to a fresh outbreak for years after. Dusting with flower of sulphur, or washing with tobacco-water, are by no means cures. Mildew generally commencing on the under side of Rose-leaves, for instance, is most difficult to get at with sulphur. I have been troubled very much with it on forced Roses; and my outdoor Roses, which I never remember seeing in finer and healthier foliage than at the present time, are here and there showing signs of this pest, which spreads like wildfire if not daily looked after. I should be glad to hear of anything more effectual than sulphur, the old remedy.

[We will be happy to hear from our correspondents on this subject.—ED.]



THE
GARDENER.

AUGUST 1873.



A FEW REMARKS ABOUT HOTHOUSES.



EXT in importance to a site for a garden is that of the position of hothouses. The position in which hothouses are placed in relation to the surface of a garden, and to other offices in connection with a garden establishment, is of very great importance, from both a cultural point of view and the ease and efficiency with which all the operations connected with the culture of plants and fruit can be carried on.

Although the ordinary architecture of fruit and plant houses is not by any means ornamental—and the less so and more simple they are in their construction the better as a rule they are adapted for plant and fruit culture—yet the appearance of a range of glass-houses, even in relation to a vegetable and fruit garden, is a point which should not be ignored so utterly as it has been in even the most pretentious gardens. Indeed, next to the seeming perversity in choosing a site for the garden itself, is the higgledy-piggledy manner in which glass-houses have been scattered about, as if they had been abstracted in an “inconsiderate rage” from a Pandora’s box, and scattered about to create the best, or rather worst confusion, and to be as inconveniently heated and difficult and laborious in their management as possible. We could refer to numerous illustrations of defective arrangement not only in choosing the locality of hothouses, but in the relation in which they have been placed the one to the other. And some of these illustrations, strange to say, might be got from establishments of a purely commercial character, where glass-houses are erected to grow fruit and

plants for sale, and where it might be expected arrangements that are calculated to reduce the expenditure of fuel and manual labour to a minimum ought to be a matter of the first importance, but where, instead, inconvenient arrangements and expensive working must reduce the profits very greatly indeed.

One of the most striking instances of blundering in connection with the recent erection of a quantity of new glass came under our notice a few days ago. Evidently the proprietor was in the humour for a very liberal expenditure in the way of graperies, &c. To the site chosen no very particular objection can be urged. It was a level piece of ground lying on a very deep subsoil of strong clay. A range of 300 feet of vineries was one of the items decided on. And, wonderful to tell, an immense excavation, sufficient in length and width for the whole houses and their borders, was excavated to the depth of 6 feet, and in this level are the vineries and borders placed. Literally buried out of sight to a great extent; and the result is damp! damp! and mildewed Vines. To increase the grotesqueness of this arrangement, a series of span-roofed houses is perched on the natural ground—level, right in front of these semi-subterranean vineries. And in heating the sunken range the boiler is placed at one end of the range instead of in the middle, to work right and left and simplify the arrangement of pipes. We know of plenty of old hothouses which have been foolishly sunk in damp subsoils, but could scarcely believe our eyes when we saw the modern range in question.

This sinking of hothouses so much below the ground-level is always an error attended with many evils. To say nothing of the dampness for a great portion of the year, sunken houses are most inconvenient to work, from the fact that several steps have to be ascended and descended every time they are entered for any purpose whatever. If there are to be steps at all they should be upwards; but even then, in ordinary cases, there should not be more than one. Another great evil attendant on sinking hothouses is, that they necessitate deep stoke-holes that are difficult to drain, and inconvenient in many other respects.

When there are many glass-houses, they should as a rule be placed compactly together and in parallel lines, and varying very little in their base-levels. They are thus much more easily heated and conveniently attended to in every respect. Another matter which saves much labour and time in working hothouses is the manner in which efficient ventilation is provided for. The way in which this very important matter is arranged in some cases is very simple and effective; in others it is the very reverse. We recently inspected a new range of glass, 300 feet long, composed of lights 4 feet wide, in which

the ventilation was effected by letting down and pulling up every light separately with a rope! and where the whole front had to be opened in the same clumsy inconvenient way. It is almost incredible that such a mode of ventilating should be adopted at this era of hot-house building.

Any system of ventilation that necessitates the moving of half or the whole of a roof to give a few inches of ventilation, is wrong in principle and most laborious in practice, and should not be tolerated for a moment. It is not our intention here to enter into the desirable minutiae of hothouse arrangements. We desire to point out a few errors to be avoided, and would recommend all who contemplate hot-house building, and who do not employ practical gardeners who are up to the times in these matters, to secure the services of some competent practical gardener as their adviser. Builders do not understand the requirements of plants and fruits, and commit great blunders in such matters; and it would not only save gentlemen much annoyance and disappointment, but it would ultimately save them much money to do as we advise.



SMALL POTS IN FORCING.

THE winter and early spring is, at first sight, the period of the year when the forcing gardener is most active; there is, at least, great activity in the stock-hole, and much and anxious communion with the boiler, thermometer, and coal-shovel. But all this activity will avail but little, if the subjects to be forced have not the desired product stored up within their tissues to yield to the forcing.

The sun, it cannot be too often or forcibly insisted on, is the great storer and manufacturer of flowers and fruit. It is not the soil, or water, or manure, and certainly it is not coal or hot water, in winter, that brings success to the gardener. But if a Vine or Strawberry plant has been well charged with the fruit-yielding elements the previous summer, indifferent management in the way of forcing will often result in a fair crop of fruit. As a general rule, all bad setting of fruit at the blooming season is the effect of weakness of the fruit-giving powers of the tree.

Now is the season when the sun is exercising his greatest influence; and therefore now, and for a few more weeks, the gardener who would force with success should be most awake and active. The sun is now maturing our annual supply of bulbs in Holland. All our own early spring flowers are being ripened, and their energies concentrated for another early display. The buds are forming on Azaleas and Rhodo-

dendrons, and the early-flowering buds are already formed on the now indispensable *Hoteia japonica*. It is the sun who is now busy storing up our future early crop of Grapes and Peaches, provided the gardener is doing his part of the work. Now is the time when the forcer must have his wits about him to withhold, assist, and prepare.

The use of the smallest-sized pots in reason for all subjects to be forced in them, is one of the most efficient helps to the proper preparation of forcing plants which the gardener can practise. A small pot helps the sun to mature the plant, by confining the roots and preventing its being over-fed at the same time. If the gardener does his part, the plant will not be starved into ripeness. This applies to Pines, Vines, Strawberries, Roses, or indeed anything to be early forced.

We believe that a better crop of Strawberries can, with more certainty, be forced out of plants in 4-inch pots than from plants in pots double the size. A highly-fed plant with a large crown, although it looks well in the autumn and winter, generally turns out very prolific of leaves and blind blossoms. But a hard rather stunted-looking plant in a small pot, with scanty crown to the eye, shoots up its flower-spikes with, at first, a seeming scarcity of leaves, but are sure to set, and leaves are sure to follow sufficient to mature the fruit. Then is the time to stimulate and feed the plant, which, in turn, feeds its offspring.

The best finished Grapes in pot-Vines we remember having seen, in size, colour, and quantity—Vines of one year—were grown in 10-inch pots, and stood in large plats of rotten manure, and fed also with liquid. Those Vines were well grown and early ripened in span-roofed pits the previous summer.

We believe that most gardeners will agree that small pots are the most desirable in which to force all sorts of fruits and flowers; as success does not depend on the size of the pot alone, but on the ripening influence of the sun on a plant—not gorged with rich feeding, as if green leaves were the object. As a seeming contradiction to this, we are also prepared to recommend the use of small pots for the forcing of French Beans and Potatoes in winter and early spring. Pots are better than the open-bed system for the former in mid-winter; and small pots of 8 or 6 inches, and even less, are better than 10 or 12 inch pots, for the same amount of produce can be obtained from the smaller size as from the larger. A large quantity of inert soil is an evil in mid-winter. Better to have the pots well filled with roots, and feed by standing the pots in plats.

With regard to the forcing of Potatoes, we have proved that a better crop can be grown in small pots of 4 and 5 inches than in large pots of 10 or 12 inches. A single good set planted in a small pot in

soil chiefly composed of leaf-mould is much to be preferred to 4 or 5 sets in a large pots ; the small pots can be accommodated on shelves near the glass with greater convenience and with less labour, and many shelves will hold the small size which would not take the larger. The chief point is, however, that a better crop is raised in the large pots from the same number of sets. The tops do not run so high in the small pots ; they are not so liable to be over-watered and sodden, than which nothing is more mischievous to forced Potatoes. A very small amount of water at the root is really necessary ; the young Potatoes will attain a very good size with very little green top. Assist the maturation of the young tubers ; it is indeed well known that tubers will form on the old sets under certain conditions without any growth at top at all, so that it is better to have the soil in the pots leaning to the dry side, so as to stunt the growth of the tops, than to encourage them to lengthen.

The same remarks apply to the forcing of Cucumbers in winter ; they may be grown with perfect success in pots or in boxes with a small amount of soil, the object being to secure the whole of the soil being perfectly taken possession of by the roots, so that sourness cannot ensue, and feeding by liquid manure becomes almost a necessity.

The earliest crop of Melons will also be found to do best in small pots, or in some way by which the roots may be comparatively confined. Our plan has long been to plant in an inverted Seakale pot placed on a hard bottom, the roots being permitted to escape as the season advances and the plants demand more nourishment.

This is not the time to be discussing the use of small pots in the forcing of vegetables ; it is, however, opportune for Strawberries, which we have particularly in view ; and the time for potting Dutch Bulbs is at hand.

THE SQUIRE'S GARDENER.

[We commend these remarks to the attention of all who are engaged in early forcing. We know that many most successful Pine-growers have this spring failed to get their early plants to start into fruit ; they grew into mere leaf instead : and why ? owing to the sunless summer of last year. There was not sufficient sun to put fruit into the plants, and no effort could do it this spring. If the dulness of 1872 could have been foreseen, pots half the usual size would have met the case.—ED.]



NOTES ON HARDY CONIFERS.

RETINOSPORA (THE JAPAN CYPRESS).

THE beautiful shrubs and trees comprised in this genus are indigenous to Japan, where also, with their numerous varieties, they are extensively planted for ornamenting gardens and pleasure-grounds.

In foliage, style of growth, and general appearance they are suggestive of the Cypresses, to which family, though separated by some peculiar botanical characters, they have evidently a close affinity.

Though little more than twenty years have passed away since the first representative of the group was introduced into European collections, there are already some eighteen or twenty species and varieties in cultivation more or less distinct, but without exception eminently handsome; and even from the short experience we have had of them in this country, the great majority having been sent home since 1864, there is no doubt of their adaptability to our soils and climate, and that they are invaluable acquisitions as decorative shrubs.

In habits of growth they are for the most part dwarf and bushy, in some cases only rising a few feet from the ground, and are thus most useful for planting in miniature gardens, grouping in flower-garden beds, or for rockeries. Two of the species, however, attain the dimensions of trees, producing timber of such excellent quality, both as regards its durability and fineness of grain, that it is much used by the Japanese cabinet-makers for their most artistic work.

Like many of their congeners, the *Retinosporas* thrive best in a deep rich loamy soil, with the land sufficiently drained to prevent any accumulation of water at the roots; and though they are for the most part hardy enough to withstand any amount of frost they are likely to be subjected to in this country, they require a sheltered situation, or at least one where they are not exposed to the full force of violent winds.

While each of the various sorts, whether species or varieties, has its own peculiar claims upon the attention of planters of ornamental shrubs, and may with confidence be recommended as worthy of introduction among the most choice of that class of plants, where space and other circumstances permit, we note the following as specially distinct and attractive:—

R. Ericoides (*the Heath-like Retinospora*).—This is a pretty dwarf species, rarely found in its native habitats higher than from 4 to 6 feet. It is much valued as an ornamental plant by the Japanese, who use it in the decoration of their gardens, and as a pot-plant for balconies and terraces.

It is here a slow-growing conical bush, clothed to the ground with innumerable tiny heath-like branches, densely covered with small leaves of a glaucous-green colour in summer, changing on the approach of winter to a bright violet-purple. It is a fine rockery plant, and most useful for winter bedding, or for margins of ornamental shrubberies, where it makes a striking contrast with others of a light-green hue.

It prefers a dry, airy, but sheltered situation, and a good rich soil, and in order to allow it to develop its true character, should always be allowed sufficient space to be free from contact with the other plants.

R. filicoides (*the Fern-like Retinospora*).—Like the preceding, this is a dwarf species, very hardy in this country, and forms a singularly elegant bushy shrub, with abundance of small branches divided into flat, frond-like branchlets. The foliage is small, but thickly set on the stems, and has a rich, bright-green colour, which it retains all over the year. It is altogether a most distinct and desirable plant, well suited for a rockery, or indeed any situation where a miniature, slow-growing evergreen is required.

R. leptoclada (*the flat branchletted Retinospora*) is another dwarf form never found in its native valleys higher than from 4 to 6 feet. It is a favourite pot-plant with the Japanese, and as such is met with very frequently in the gardens of Yeddo. In this country it is an exquisitely pretty plant of a sharply conical shape, the branches very dense, and divided into numerous short flattened branchlets, each one resembling the fronds of a Fern or Lycopod. The foliage has a distinct silvery-grey colour, assuming a darker hue in winter. It is a superb winter garden or rockery plant, and ought to be extensively grown, both for its neat form and its distinct colour.

R. lycopodioides (*the Club-Moss Retinospora*), also a dwarf species, with a spreading rather than a conical habit of growth, the branches very abundant, and divided into slender branchlets, densely clothed with leaves imbricated round the stem. The colour is bright green—equally so in winter as in summer. It is an elegant and distinct-looking plant, well worthy of cultivation, and suitable for similar purposes as the other dwarf species, and like them of slow growth.

R. obtusa (*the blunt-leaved Retinospora*).—This magnificent species is found in various districts in Japan, particularly on the Island of Nippon, where it is the principal forest-tree, and rises to heights of from 70 to 100 feet, with a straight arrow-like stem from 3 to 5 feet in diameter at the base. Its timber is fine-grained, capable of receiving a brilliant polish, and of a beautiful white colour—qualities so much appreciated by the Japanese, that they regard it as sacred, call it the “Tree of the Sun,” and use it in the construction of their temples and other religious buildings.

Though as yet a comparative stranger to British gardens, it is already widely distributed; and enough has been seen of it to prove that it is a most valuable lawn specimen-plant, of free growth, and thoroughly hardy, thriving in almost every district of the country and in every variety of soil, and an acquisition equal in importance to any of the grand introductions of a similar kind from California.

In a young state its habit of growth is sharply conical, but as it advances the branches become more spreading, and show a tendency to assume the broad horizontal style characteristic of the tree on its native mountains. The foliage is of a rich dark-green colour, and the general appearance similar to that of the Cypresses.

Like all the rest of its tribe, it grows best when sheltered and in good rich soil, and is never more beautiful than when planted singly as a specimen on grass.

Among several varieties there are two variegations deserving of special notice—the one, named *aurea*, has its green branchlets freely intermixed with golden yellow, and *argentea*, in a similar manner with silvery white. Both were found originally in gardens in Japan, as indeed were most, if not all, the varieties in cultivation. These are much dwarfer than the species, but quite as hardy, and very effective in spring when making their young growths.

R. pisifera (*the pea-fruited Retinospora*), found wild in mountain forests in the Island of Nippon associated with *R. obtusa*, is a very handsome but much smaller tree, seldom rising higher than from 20 to 30 feet, and producing timber of equal value to that species.

It is here thoroughly hardy, and grows more rapidly than *R. obtusa*, forming a beautiful lawn-specimen of a broadly conical shape; the branches very slender, and shooting out from the stem in a horizontal direction. The foliage has a distinct, warm, green tint on the upper surface, and is bright glaucous on the under. It thrives well under similar conditions with *R. obtusa*, to which it is a fine companion-plant.

The following varieties can scarcely be too highly spoken of—their neat style of growth and brilliancy of colours render them almost universal favourites, and must always secure for them a prominent place among decorative shrubs; they are dwarfer than the species, but quite as hardy, and invaluable for flower-garden beds or rockeries: *Argentea*, with most of its branchlets tipped with bright silvery white; *Aurea*, and *Nana aurea*, the latter one of the dwarfiest and neatest of Conifers, the branchlets of both appearing as if gilt with the purest gold.

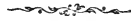
R. squarrosa (*the scaly-leaved Retinospora*) is found wild on the Island of Kiusiu in Japan, where it attains a height of from 10 to 15 feet. It is only seen here as a small round-headed bush, densely furnished with long slender branches, clothed with abundance of glaucous-coloured leaves. It is quite hardy, but requires a sheltered situation, and is handsome enough to be recommended as a rock-work plant, or for associating with the other dwarf species in flower-garden beds, to which, from its peculiar colour, it makes an effective contrast.

R. plumosa (the *plume-like Retinospora*).—This is a very distinct and interesting species, among the most recently introduced of the genus. The experience of the last three or four winters proves its perfect hardiness; while it is found to grow in ordinary soils quite as freely as the other species. In habit of growth it is very compact, with a blunt round top; the branches are slender individually, but produced in great abundance; the foliage has a light-green or slightly glaucous tint.

It is a superb dwarf shrub, not likely to rise higher than 2 or 3 feet from the ground, and admirably suited for arrangements of neat dwarf plants.

A charming variegated variety, *P. aurea*, has a fine golden tint intermixed with its green spray, and is also a fine dwarf plant, very effective, particularly in early spring and summer.

HUGH FRASER.



PINE-GROWING AT WYCOMBE ABBEY.

A FEW days ago we found ourselves journeying along the Great Western Railway through Buckinghamshire to have a look at Wycombe, to pay a promised visit to Mr Miles, and to see his Pine-growing, for which his reputation stands deservedly high. As regards soil and climate, Buckingham is one of the finest counties in England; and in one of its warmest and most sheltered valleys lies Wycombe Abbey, the seat of the Rt. Hon. Lord Carrington. But as our notes are not ample enough to do justice to the place by a general description, we will speak of the fruit garden only, and the Pines occupy the first place. The pine-houses, or rather pits, are not very pretentious structures, but they are light and well adapted to their work. In one division there were twenty-eight plants, principally Queens, just about finishing their fruit. Among the lot there was not one ill-formed or small fruit. The Queens would average, I should think, 5 lb. apiece—many approaching 6 lb.—and the Envilles and Smooths amongst them would be much heavier. The plants were in 12 and 14-inch pots, were dwarf and squatty in habit, and more remarkable for the substance and rigidity of their leaves than anything else. I do not recollect ever noticing pine leaves of such *thickness*, and it confirmed an impression I had previously entertained that great substance of leaf was always to be found in conjunction with large and fine fruit, and was of infinitely more importance than either length or breadth. As a case in point, I may mention that the Hurst House Pine has short but remarkably thick leaves, and its remarkable feature is its large fruit compared to the size of the plant.

Mr Miles' succession stock looked like unusually strong autumn-struck suckers, but I was informed that they were rootless suckers last March, and were intended to ripen their fruit in 17 months from the time they were detached from the old plants. A later lot of fruiting plants, consisting of Smooths, Charlotte Rothschilds, Queens, &c., were just showing fruit, and promised just as well as the others. Mr Miles prefers the C. Rothschild Pine to the Smooth Cayenne for all purposes, but in this some will not agree with him altogether; for the Smooth is, we think, more accommodating, easier grown, easier induced to show, and swells better as a rule. The soil which Mr Miles uses is a yellow fibry loam of the very best description, and the supply, we understand, was inexhaustible. In fact, the same soil forms the staple of the kitchen garden soil, and both fruit and vegetables showed how they delighted in it. Upon the refuse soil heap we saw some old balls of pine plants, which were so completely warped with roots that you might have kicked them like a football before you without breaking them. With such materials, and the skill and enthusiasm which Mr Miles brings to bear upon their culture, we could understand his great and constant success. Wycombe is chiefly a fruit-growing establishment, and indoors and outdoors the same excellent results are observable. The houses and kitchen-gardens are compact, and always under the inspection of the head of the establishment; and it was easy to see that every department received much of Mr Miles' personal attention—as a rule, the secret of success in gardening. Early Grapes were a fine crop, fruit beautifully coloured; late ones very promising. Early Melons all cut and over early in June, and an abundant succession lot coming on. Cherries under glass nearly over, but just enough to show how plentiful and excellent the supply had been for weeks back. Our visit was, however, very hurried; and much regretting that we could not spend more time with such a kind friend and thorough gardener as Mr Miles, we found ourselves again hurrying through the rich Buckingham meadows and woodlands towards the Metropolis.

J. S. W.



STOVE-PLANTS FOR EXHIBITION.

(DIPLADENIAS.)

THESE climbers are among the most effective of all stove-plants when liberally treated, and are equally valuable either for exhibition purposes or for home decoration. At the Bath show of the Royal Horticultural Society this year, Mr W. Cole of Withington, Cheshire, exhibited a magnificent plant of *D. amabilis*, bearing about 120 trusses of its great wax-like flowers, the foliage being, according to

a somewhat hackneyed expression, "as green as a leek," but in reality much greener. It is needless to add that this plant created quite a *furor*, not only among amateurs, but also among professional plant-growers, who know a thing or two about these plants and their capabilities when well managed.

Dipladenias grow well in a fresh, open compost, composed of lumps of turfy or fibrous loam, leaf-mould, and coarse river-sand. The pots should be thoroughly well drained, and then the plants may be freely watered when making their growth. They are easily propagated from cuttings taken off soon after the plants break in the spring, and inserted in a well-drained cutting-pot, which should afterwards be plunged in a moderate bottom-heat and covered with a bell-glass, unless the convenience of a close propagating case is at hand. After the cuttings have rooted, pot them off carefully in the above compost, using small pots, and then set them in a close frame until well established, after which they may be removed either to the plant-stove, or to a shelf in the pinery where there is a stove-temperature, and a moderately humid atmosphere. As the pots become filled with roots pot them on, taking care not to allow them to suffer a check through being pot-bound, as this might induce premature flowering, and spoil the plants for the season. When the pots become filled with roots, and the shoots 3 or 4 feet long, they will begin to show their flower-buds in the axils of the leaves; and at this stage a little clear manure-water made from sheep or cow dung, and a handful of guano thrown in, will greatly assist them in developing fine flowers, besides improving the colour of the foliage. In order to prevent the shoots from intertwining themselves in inextricable confusion, it is a good plan to train each growth on a separate piece of thick twine strained a few inches below the rafters, thinning out all weak or superfluous runners at the same time. When the flower-buds show themselves the twine can be cut, and the shoots carefully trained on a globe, or balloon-shaped trellis, ready for exhibition when the flowers expand. Two-year-old plants are most to be relied on for exhibition, as for the early summer shows the plants must be started into growth in December, or early in January, and grown on rapidly to the flowering stage; and young plants are more vigorous, and grow on more freely than debilitated old scrubby specimens, which persist in parting company with their lower leaves, and assuming a "leggy" appearance not to be desired either for exhibition or decorative purposes. The plants are seldom troubled with insect pests if grown on freely in a humid atmosphere, but a slight dryness at the root often gives both thrip and red-spider an opportunity of commencing their ravages. The plants should be syringed at least twice a-day when growing; and if that is not sufficient

to protect them from noxious insects, give an occasional syringing with a decoction of Fowler's Insecticide—one of the best and cleanest we have used, and certain death to both black-thrip, red-spider, and green-fly. Two of the best *Dipladenias* commonly grown for exhibition are garden hybrids, having been raised from seed by Mr H. Luke, a well-known exhibitor at the Leeds and Yorkshire shows. These are *D. amabilis* and *D. amœna*, seedlings from *D. crassinoda* and *D. splendens*. Another, and if possible a more handsome variety, has been raised at Well Head, near Halifax, by Mr S. Feunwick—this being a seedling from *D. amabilis* named *D. insignis*, and now in the hands of Messrs Veitch & Son, who have several times shown it in flower. Its blooms individually measure nearly 5 inches in diameter, and are of a vivid rosy-crimson colour, and of good substance; while the plant appears to possess the robust constitution of its parent, and will doubtless make an effective plant for summer and autumn exhibitions when distributed among growers. The best kinds for exhibition are *D. amabilis*, *D. splendens*, *D. crassinoda*, *D. amœna*, and to these we may add the delicate white-flowered *D. Bolivienis*. This last species is very distinct in colour, all the other species bearing rosy or yellow flowers. A nice plant of this species was staged at the Bath show, but it is very rare in general collections, though very beautiful when well grown and laden with its snowy, salver-shaped blossoms. *Dipladenias* make effective stove-climbers trained up wires along with *Cissus discolor*, *Gloriosa superba*, *G. Plantii*, or *Stephanotis floribunda*; and plants so treated produce a fine supply of choice flowers for cutting, and grouping along with Ferns and Lycopods in the drawing-room vase.

When the plants are resting, they may be kept moderately moist at the root and in a dry and comparatively cool atmosphere. When they are wanted for starting, take them into the stove and plunge them into a moderate bottom-heat, repotting them in good fresh compost as soon as the roots begin to move. Do not give too much water at first, but let the plants get into vigorous growth, after which it may be liberally supplied—strengthened occasionally as already recommended. Some of the older species, as *D. Harrisii*, bearing golden-yellow flowers, blotched with crimson; *D. flava*, bearing clear yellow flowers; *D. nobilis*, bearing pale-rosy flowers; *D. acuminata*, and *D. urophylla*,—are more or less valuable as general decorative plants all requiring stove treatment, and most of them are very rare in modern gardens.

If our plant-growers were to pay more attention to the cross-breeding of these and other stove-plants, we should doubtless soon become possessed of other choice varieties, valuable either for decoration or public exhibition.

F. W. B.

THE IMPORTANCE OF DEEP DRAINAGE.

IN a letter last month, you discussed the subject of the situation of a garden ; a few words on the great importance of thorough drainage may not be amiss as a sequel. Having selected your site for a garden, the first thing to be attended to is the drainage. There are few spots but which would be benefited by drains. There are some sharp gravels indeed, but these are unfit for gardens. But whether the soil be strong, even approaching clay, and requiring to be burned to make it porous and workable, or whether light sand, which, if touched when wet, becomes a thorough quag, or even the best friable loam, abundant means ought to be provided for the escape of superfluous moisture. Our present object is to enforce the great importance of deep drainage—we mean, from 4 to 6 feet, according to circumstances ; and as reference has been made to low-lying gardens, we would at once say that any spot whose drains are likely to be choked by flood-water is unfit for a garden. Proper outfalls are of first consequence, with gratings for the exclusion of vermin. Great mischief is often the result of rabbits getting into the mains, and not being able to get out again. In all drainage works—and we have had some little experience in the matter—our maxim is, the fewer mouths the better, even when the area is large ; and if you have to carry your mains a little longer, this is no detriment, and even in a garden the pipes made at the present day are sufficient for all purposes, so that no barrel drains are required, as they were formerly, and the expense is consequently less. After deep drainage, whether in field or garden, follows deep cultivation. Soil that has been moved retains moisture and admits air. Such a soil does not readily dry—does not readily drown. Superfluous water is most injurious, and a parched soil is equally unproductive ; therefore we say, drain deeply—the distances will be determined by the nature of the soil. Cultivate deeply, especially at first, and let the ground, if possible, be broken up in dry weather. With deep drainage the soil works quicker after winter, or after rain. Crops are earlier as the ground is warmer, fruit-trees more healthy and productive, and the whole affair more satisfactory. S. X.

**HINTS FOR AMATEURS.—AUGUST.**

IN the fruit-garden there will be much annoyance from the depredations of insects and birds. Early Plums and Cherries are among the favourites of winged visitors, and, when they are not promptly covered by nets, mischief is often done to such an extent that all the fruit

which can be saved would scarcely pay for gathering. Nets are expensive articles. In their absence, a tame hawk or two would do much to keep away birds. We often go over the fruit and pick them as they change for ripening, and lay them on dry clean shelves to ripen. Vineries and Peach-houses, cleared of their fruit, suit well for ripening stone fruit. Wasps are easily trapped with beer and sugar placed in bottles and hung up among the branches. Lumps of sugar keep insects engaged while the fruit is ripening. Hexagon netting will save much trouble and anxiety. Young growths on fruit-trees may now be kept well cleared off, to allow the fruit-bearing wood to ripen. Thickly-matted trees are generally followed by an absence of fruit. There is generally too much time wasted in nailing in or tying up wood on wall-trees; half the quantity of wood is often enough. The injury done to walls by the undue use of nails cannot be too strongly denounced. Now is the time to do justice to the trees: train out as many leaders as will cover the wall and be about 12 inches apart at top; gross wood may be stopped, and the consequence will be a number of smaller shoots will break out, and they can be placed in position if they are required; the side shoots are to be retained to cover the wall, always allowing room for the foliage to develop itself; everything growing straight out from the wall should be taken clean off.

If growth is over-luxuriant, it may be checked by moving away some of the soil from one side of the tree, getting under the trunk; and if any roots are growing straight down, they might be cut clean off: but, while advising this, the destruction of good fibry roots is to be avoided. Make the soil thoroughly firm under the roots, replacing it carefully. The tree will soon overcome this, and the roots will again be growing by autumn.

If the growths have not been taken from Pears and Apples piecemeal, they should have attention now. Go over the upper part of the trees first, and after a week or two go over the lower part. Let the fruit be well exposed to sun and air. If red-spider should appear, let the engine play freely over the foliage.

If the desired quantity of Strawberries have not been planted, let them be got in without delay. Give plenty of space if the ground is deep and rich, and abundance of water. If there are no young plants, some of the best of the outside crowns may be taken from plants which are to be trenched down. If they are planted firmly on well-manured ground, they will soon be fine fruitful plants. But certainly this practice is not in preference to young plants, or those forced last season.

The chief work in the flower-garden now is picking off decaying flowers, cutting in growths within bounds, to keep the beds and bor-

ders uniform. The continued use of the shears, scythe, and hoe is necessary to high-keeping. A flower-garden, to be considered highly kept, should always have the appearance that no work is or has been going on. Few places, however, can master matters in this way. It is always the best policy to keep a portion of the ground thoroughly, instead of a large space only half done. If plants have been placed thickly in the beds to fill up at once, they should be thinned out before they become matted. Prompt attention to the amenities of gardening is most conducive to success. The alternate system of rough and smooth is far too common. Dahlias should be frequently gone over and fastened to their stakes; prevent them from getting too thick; cut off flowers as they get past their best, except where seed is wanted. Hollyhocks should be stripped of their decaying flowers, and all bad leaves taken from the base of the plants. They should have abundance of manure water. Climbing plants will be growing freely, and must have attention with tying and trimming off what is not wanted, but they should not be made stiff and formal looking. Roses require a deal of work to keep them orderly; suckers and decaying flowers must be kept off, and abundance of manure water, if the soil is not rich and of stony texture: bud favourite sorts. Weeding or salting of walks will now claim attention. Roll well after rain—a smooth surface is very desirable, but this is impossible with some kinds of gravel. Keep pods picked off Sweet Peas, to keep them vigorous. They may be topped well back when they are over-growing their stakes; give them plenty of manure water. Stake Cloves and Carnations, and if very fine flowers are wanted, reduce their number and water with liquid manure. Let a good stock of cuttings be put in, and layers, if they have not already had attention. Cut off decaying blooms; prevention of seeding keeps the plants vigorous. Chrysanthemums will now require plenty of water; liquid manure may be given occasionally; keep them (and all other plants) turned round to the sun to maintain equal growth; stake out in good time to keep the foliage healthy and prevent crowding in the hearts.

Propagate bedding-plants without delay. Verbenas do well at this season when placed in frames in rather a shady position; prevent flagging of the foliage,—they will root more freely. Take young tops off Fuchsias, to supply plants for next season; those flowering require liberal soakings of manure water. Keep late-flowering Pelargoniums, Heliotropes, Coleus, Petunias, Salvias, and all similar plants for conservatory decoration, growing freely. Let them get once pot-bound, and limit their supply of water, and their value for autumn flowering is at an end. Cinerarias and Primulas required for early flowering should be kept in small-sized pots, and when they show flower, a

liberal shift may be given. Those for general supply must have plenty of root-room and free drainage. Water-logged roots, or if they are allowed to starve for want of moisture, will give much disappointment. It should, however, be kept in mind that potting should be done so that the roots will fill the pots before winter, as, when they are buried in large quantities of soil at that season, they are in a dangerous condition. Let Azaleas, Camellias, Cytisus, Coronillas, and similar plants, be well ripened by sun, and water moderately. Keep Calceolarias growing in rather a cool and shady position; they must have abundance of air. Achimenes will bloom late, if they have plenty of water and are not subjected to cold draughts. Heaths, and any of the more delicate greenhouse plants, should be taken under glass if they are now out. All hardy plants for early-forcing purposes should be kept well in the sun to ripen them early. Roses in pots should have their blooms well kept off, and root-action encouraged. Stage Pelargoniums should now be cut down, after being well ripened in the sun. Shake out those which have broke an inch or so, and pot them in smaller pots.

W. T.



FLORIST FLOWERS.

THE AURICULA.—*Continued.*

We shall suppose it is now November and the offsets look well, while they are comfortably staged in the winter quarters, everything having been done promotive of their general welfare as regards cleanliness, in washing both wood and glass. The condition of the soil in their pots may indicate a want of water (were it summer instead of November), but do not give them any. So long as the foliage shows no signs of flimsiness or languor for the want of moisture at the root, little should be given throughout the succeeding winter months. Still, when necessity demands that some of the plants be watered, choose a breezy fresh morning, and give enough to moisten the entire ball by one or more applications.

The subsequent wants of these young plants are indeed few: while at comparative rest a daily inspection to detect and remove withered leaves, a sharp look-out for the appearance of gangrene in a course of dull damp weather, and, as has already been said, a continuous admission of fresh air by keeping the side ventilators down until fresh signs of growth appear in March; then water must be supplied more copiously and uniformly, seeing, after the first good watering, that no defect exists in the drainage. And should any of the plants throw up flower-stems, let them be removed at once, as their production is calculated to retard the growth of the plants. At this period the plants will be wonderfully benefited by occasional gentle showers of rain on mild days.

Thus managed until the general flowering season arrives, we shall now leave the offsets and bestow our attention on the old "stools," retracing our steps back to the month of August, and resuming our directions where we left off. We had so far advanced in our procedure as to have the old stools dressed and in readiness for potting. The next thing to be considered is the soil

and mode of potting. For old plants, a rather rich compost of firm consistency is requisite—viz., two parts firm well-reduced turfy loam, one part equal proportions river-sand and leaf-mould, one part cow-droppings that have been heaped up for a year under cover, with a liberal sprinkling of oyster-shells finely pounded before being mingled with the other ingredients. Potting Auriculas is rather a particular business, requiring some care in its performance. First to be considered are the pots. They ought to be either 5 or 6 inches in diameter, and they, as well as the crocks used for drainage, should be scrupulously clean. Crock the pots by first placing a large piece over the hole at bottom, over which a layer of lesser-sized crocks; then cover these with oyster-shells, next a thin layer of fibry turf, over which heap the compost in a mound to within an inch of the rim of the pots; assort the fibres of the plant regularly over this mound, and rest the centre of the plant in the middle; shake a handful of silver-sand among the roots, and proceed to fill the pot with the compost, completing the operation by a few strokes on the bench and smoothing the surface. Moreover, be satisfied that the plant is not sunk so that its neck is below the rim, thereby subjecting the leaves to getting water lodged amongst them when watering. Carefully water the plants, giving enough to penetrate the entire body, and have them staged for the present in their old quarters, shading with some light covering on sunny days, until it is ascertained that the roots have taken to the soil; but never exclude a free circulation of air at any time. I need scarcely remark here that we suppose the frame the plants are about to occupy is situated in an airy northern aspect, where the sun's rays seldom reach. This is absolutely necessary to the Auricula as summer quarters; and furthermore, that the frames are furnished with a stage at least 1 foot above the ground-level, on which the plants are placed.

What further remains to be said appertaining to old stools, in a cultural sense, may be comprehended in few words. Be careful not to over-water, especially before the plants have re-established their roots in the fresh soil; guard against heavy showers of rain by having the glasses or other protection above them, but on no consideration allow the frames to be closed day or night. Be watchful of the common destroyer, black-rot, invading their ranks, in, as is often the case, a quiet, imperceptible way, that takes the cultivation by surprise; prevent any chance of this by overhauling the plants now and then with a sharp eye, to detect it before it does much damage. Continue thus to attend them till the month of October, when they ought to be placed in the winter-house, there to be tended in the same manner as the offsets in every respect till early in March, the time to top-dress.

Top-dressing is most essential to all those plants which are intended to flower; and the mode of performing this is to remove about an inch of the surface-soil, loosening it with great care to the roots. This soil is replaced by an equal quantity of fresh compost, consisting of two parts old cow-droppings.

Hints preparative to and after flowering.—It is necessary to wash any pots that require it after the process of top-dressing, while all withered leaves must also be removed; then replace the plants in the frame, and supply each with sufficient water to effectually wet their balls; but should any of the plants show signs of being sufficiently damp, allow those to become dry before giving them any.

Active growth is commenced by some sooner than others; those should be encouraged by getting plenty of water, abundance of air, and a few gentle showers

of pure soft water through a very fine rose. Indeed it is quite in their favour to have the sashes removed altogether if the weather is not frosty, and otherwise favourable, up to the time when the flower-stems make their appearance, when they must no longer be exposed, in case of frost affecting the young flowers. This is the most critical stage, and much depends on protecting the hidden blossoms for the success that will follow. Be watchful not to wet the leaves in the evenings when watering; at the same time handle the foliage as little as possible, to preserve the beautiful powder with which many of the leaves are furnished, which powder just supplies the part of the bloom found on the leaves of almost every other plant.

Change the aspect of the frame from a southern to a northern one as soon as the pips begin to open, and keep up an airy interior, which both invigorates the plants generally, and enhances size and colour in the pips. Thin out any very small or deformed flowers as soon as practicable, with the object of obtaining uniform crowns of flowers; protect the blooms from direct cold currents by airing from below and by the side ventilators.

Finally, when the blooming season is passed, the plants should be removed to their summer quarters—into a situation, as has already been described, looking north, protected from winds by the shelter of a wall or hedge; and the only other protection required is a covering to ward off heavy rains. Attend to watering and stirring the surface of the soil when it gets mossed over or crusty, removing dead leaves, dead flowers, stems, &c.; and this, with a constant look-out for rot, sums up their wants until potting-time again.

SELECT LIST OF SORTS.

Green-edged.—Admiral Napier (Campbell's), Apollo (Hudson's), General Havelock (Traill's), John Bright (Smith's), Lady Blucher (Clegg's), Star of Bethlehem (Lightbody's), Lycurgus (Smith's), May Morning (Simpson's), Lord Palmerston (Campbell's).

Grey-edged.—Alma (Lightbody), Duke of Cambridge (Dickson), George Lightbody (Headly), Perfection (Bone's), Unique (Dickson's).

White-edged.—Earl Grosvenor (Lee), Lady Sale (Smith), Robert Burns (Campbell), Model (Gairns), White Rival (Traill's).

Selfs.—Apollo (Dickson's), Blackbird (Spalding), Cheerfulness (Turner), Eliza (Sim's), Lord Clyde (Lightbody's), Formosa (Smith's), Vulcan (Sim's).

The following are a selection taken from the collection grown by Mr Douglas, St Bride's, Edinburgh, a most enthusiastic Pansy-grower. I shall just give the names as they occur in my note-book, without classing; all may be relied upon as the first of quality: Fair Maid (Lightbody), a white edge; Prince of Wales (Ashton), green-edged; True Briton (Hepworth); Maria (Chapman's), white-edged; Lady Jane Grey (Dixon's), white-edged; Duke of Wellington (Dick's), green-edged; Maggie Lauder (Lowes), white-edged; Britannia (Smith's), grey-edged; Ne plus ultra (Fletcher), grey-edged; Lancashire Hero (Chatham), General Bolinar (Smith), grey-edged; Richard Headly (Lightbody), grey-edged.

A FEW CULTURAL HINTS ON ALPINE VARIETIES.

These of late years have made a great advance in the quality of their flowers, and are now favourably received, and allotted a corner in most gardens. Many of them are very beautiful indeed, equal to dispute the field with stage varieties. Their wants are simple in every way, neither craving the best situation of the garden for a bed—that is, a south border at the bottom of a wall—nor that of a cold, damp, soured place behind a wall. Perhaps the best situation in the

garden is facing the east, where they have the sun in the morning and the earlier portion of the day. The ground ought to be well drained, the soil rather heavy than light. Moreover, to have large clusters of full-sized pips, allow a fair proportion of properly-reduced cow-manure to be well wrought amongst the soil.

Sowing the Seed.—January is perhaps the best month for sowing the seed, as the seedlings usually make their appearance at a time when the days begin to lengthen, consequently there is less danger of the plants damping off, which is not the case when the seed is sown early in the autumn of the year.

When about to sow the seed, first half fill a shallow pan with crocks, then cover with rotten fibre, next fill with the compost, which ought to be a mixture of three parts finely-sifted loam and one part sand and leaf-mould. Smooth the surface, sow, and only cover the seed with a little silver-sand; stand the pan in a comfortable corner in a greenhouse, and keep the soil moderately moist until the seedlings appear, being careful not to disturb the soil while in the act of watering, and especially careful not to wet the leaves of the seedlings while in the early stage of their growth, else they will soon disappear. Plant out into boxes 2 inches apart as soon as the plants are in fit condition to handle, giving them the benefit of a cold frame; and ultimately, when again prepared for the final shift, plant them into the bed, prepared in lines 8 inches apart, which will be enough space until the inferior varieties are removed.

In the following autumn the bed may be entirely remodelled, and planted anew with the finest varieties of the batch, allowing the space of 12 inches both between plants and between rows.

Another and not a bad method to follow I saw put in practice this spring in the nurseries of Mr Gordon, Edinburgh; and it was a sight worth seeing. The bed of immense size was planted so thick as to hide the ground, without being lined, presenting to the eye one blazing mass of mingled colours of every shade natural to Alpine Auriculas, and many of them really excellent sorts.

A. KERR.



THE CULTURE OF HARDY AND HALF-HARDY ORCHIDS.

It has often occurred to me that these plants should be more generally cultivated than is at present the case, more especially as many of them are, when well grown, scarcely less beautiful than the more expensive Epiphytes of our Orchid-houses. I am induced to make a few remarks after reading the practical letter of your North Wales correspondent in last month's 'Gardener.' "G. G." may certainly congratulate himself on having been so successful as to flower a large number of the Italian species received by him under such unfavourable conditions. Terrestrial Orchids ought, as a general rule, never to be disturbed when making their growth, or in the flowering state; still I know from experience that many gardeners continually receive them from their employers or their friends, who happen to be travelling on the Continent when these beautiful plants are in flower. The best way of collecting these plants is to mark them when in flower, and afterwards to remove them when the foliage has died off, and the tubers are

thoroughly ripe and dormant. They (the tubers) should be carefully packed in moist earth or sphagnum during transit, and must be potted off as soon as received at home. The soil best suited for their requirements is strong fibrous loam, with a mixture of leaf-mould and coarse sand; other species, as many of the *Ophrys* and *Cypripediums*, affect a chalky soil, or lumps of limestone may be broken and mixed with the fibrous or turfy compost. The pots should be well drained, and the soil pressed firmly around the tubers, after which plunge the pots in ashes, sand, or cocoa-nut fibre, in a cold frame, where they may remain all winter; all the attention they will require is to keep the soil moderately moist, nothing being more injurious than to let them get dust-dry. In a state of nature all bulbs and tubers get a copious supply of water during the winter season, or while they are at rest; and I have often thought that the reason many cultivators fail in growing these plants is, because they dry them off during the winter months. The pots should be protected during heavy rains and severe frosts, either by having the glazed lights drawn on, or an oil-cloth spread over the pit or frame in which they are plunged. The foregoing instructions may be followed out in the case of rare or delicate Continental species; but many of the British and American species may be planted out in the rock-garden or herbaceous border, and will in most cases be found to succeed to perfection. One of the most beautiful of all hardy terrestrial species, *Cypripedium spectabile*, grows vigorously planted out in a peat-bed on a cool clay bottom; while our only British species, *C. calceolus*, grows best in a chalky loam, fully exposed to the east, but sheltered from the mid-day sun. In Messrs Backhouse & Son's nurseries at York, these two beautiful species grow vigorously and flower profusely every summer, along with many species of *Orchis* and other Continental *Orchids*. When these plants are grown outside, select a partially shaded spot well furnished with other herbaceous plants, and plant the tubers 5 or 6 inches below the surface; they will find their way through in due time, and will not suffer from the vicissitudes of the weather as they would if planted just below the surface of the ground. The contiguity of other herbaceous plants prevents undue evaporation from the soil in which they are planted. During winter a mulching of short litter, leaves, or manure, will protect them both from frost and cold rains. I sincerely hope these beautiful plants will meet with every encouragement in our gardens, for amongst terrestrial *Orchids* there are many species not yet introduced to our collections that will bear comparison with the choicest *Epiphyte* in point of beauty and fragrance. At the same time they may be grown without the unpleasant heat and extra labour required by tropical species from hot countries. I wish your correspon-

dent "G. G." every success with his terrestrial Orchids, and hope that other horticulturists may be induced to attempt the culture of hardy Orchids, and that, like "G. G.," they will frankly favour us with practical notes of their experience.

B.



PEACH CULTURE UNDER GLASS.

VENTILATION.

THE Peach dislikes a close, stagnant atmosphere, and should be as freely ventilated as circumstances will admit of all through the process of forcing. If the house is kept too close and moist before the blossom expands, such conditions are sure to produce weakly blossom, and also dispose the wood-buds to too much precede the blossom, always an evil to be guarded against. Therefore give air, more or less, daily as weather permits, from the time the house is first shut up; and when the blossom is open, air freely on all dry days, and leave a little on all night, but guard against currents of cold frosty air. Most early forcers of the Peach will have observed that wherever cold gusts of frosty air have reached any part of the tree, at that particular part the process of setting has been the least satisfactory. While a circulation of dry warm air is desirable, it should be admitted in small quantities at many points, so as to prevent the blossoms from being subjected to blasts of it. In the case of early forcing, front ventilation should not be applied, unless the air can first be warmed, at least until the fruit have approached the colouring and ripening stage. Like firing, ventilation must be cautiously regulated, according to the state of the weather, and when the fruit are ripe, a free circulation of warm dry air is necessary to flavour and colour them.

MOISTURE IN THE AIR AND SYRINGING.

Although the Peach is a moisture-loving plant, I do not approve of heavy and too frequent syringing at mid-winter before the fruit are set. As has already been said, it has a tendency to bring the foliage too much in advance of the blossoms. Notwithstanding all that has been said in favour of syringing heavily when forcing is commenced, to cause the bloom-buds to swell freely, I have never observed that, with the house kept moderately moist without syringing, the blossoms burst at all less vigorous when syringing has never been practised till the fruit are set. The floor and paths should be sprinkled at shutting time, and on bright mornings after cold nights when extra fire-heat has been applied. As soon as the fruit are set, the syringe should be

vigorously used every dry morning, and, especially in the afternoon, when the house is shut up with sun-heat.

Syringing should be thus continued until the fruit shows signs of ripening. The Peach is subject to red-spider, and syringing keeps that pest at bay, and it also likes moisture about its foliage. The morning syringing should always be early, so that rapid evaporation does not take place as ventilation is increased. Clear soot-water—that is, water in which dry fresh soot has been mixed and allowed to stand and become clear—may be applied occasionally with the engine or syringe to advantage. The ammonia from the soot gives a dark healthy hue to the foliage.

SETTING THE FRUIT.

I have never found the least difficulty in getting Peaches to set freely, even when they have been started in November. The only means I have ever adopted to make a good set of fruit doubly sure, is to slightly increase the temperature immediately the blooms are fully expanded, to give rather more air, and to go over the blossoms at mid-day with a camel's-hair brush, and impregnate them, taking pollen from those sorts, such as *Violette Hative*, which produce it more freely than others, and applying it to such as *Noblesse*, which produce it more sparingly.

I do not think that setting depends so much on a very dry atmosphere as on a circulation of warm air, which causes the pollen to come to proper maturity. Some growers advise that the trees be syringed with tepid water when in full bloom, and practise this to set their Peach crop successfully. I have never adopted this, and never found it necessary, but it is practised by successful early forcers of the Peach. There can be no difficulty in accepting what has been said in its favour, inasmuch as it can be easily understood how the particles of pollen can be separated and carried down the pistil by means of water as well as air. It is, in as far as it can be aided, a mechanical process. I consider the chief thing is to produce a strong healthy bloom and fructifying organs, by cautious forcing, and then the setting of the fruit is almost a certainty.

WATERING.

It is difficult to lay down directions as to the time that Peaches require to be watered at the roots, so much depends on circumstances, such as the nature of the soil, &c. &c. In the case of trees having their roots in both inside and outside borders, it is never necessary in early forcing to water the outside border. The inside border should be thoroughly moistened to the bottom when the house is put in order

for forcing. I have an objection to a Peach border becoming dusty-dry at any time ; for if the trees once become too dry, and are then copiously watered, and started soon after, they are apt to cast their bloom-buds after they begin to swell. Under ordinary circumstances I have found a good watering when the house is about to be started, another after the fruit are set, sufficient. After this the constant syringing and damping keep the border from drying, and the watering after they are set will carry them to the stoning process. After they are stoned, two waterings will be enough till the fruit begin to ripen. Then mulch the border with short dung, and no more water should be applied till the fruit are all gathered, after which the border must be kept moist till the wood is ripe, and the leaves dropping.

Manure-water may be freely applied at all times of watering in the case of full-grown, free-bearing trees. Young trees growing vigorously should not have manure-water, as their tendency to a gross growth will be stimulated by it.

RIPENING AND GATHERING THE FRUIT.

The colour and flavour of Peaches and Nectarines are perhaps more dependent on given circumstances than are the same qualities in any other fruit. Unless the sun shine directly on the fruit, it will not attain its proper colour ; and unless, in addition to exposure to sunshine, they are subjected to a circulation of dry, warm air, the flavour is sure to be deficient. Consequently all leaves that intercept direct sunshine must be pushed aside, after the fruit has begun to take its last swelling. If the leaves cannot all be laid effectually aside, it is better to remove all or half the leaves of some than that they should shade the fruit. I have rarely found it necessary to cut the leaves or remove them entirely. When the wood is not too thickly tied in, such a necessity seldom occurs.

As directed under the head of ventilation, the Peach-house should be freely opened at top and front all day, and the wet-weather ventilation left open all night. The practice of pulling down the sashes, where this can be adopted, entirely exposing the fruit to sun and air, in ripening and colouring summer and autumn Peaches, is a good one. It gives high colour and flavour. Of course this should only be practised when the weather is clear and dry.

The experienced eye can tell, in case of the majority of sorts, when the fruit are fit to gather without handling them : when they are handled it should be with great nicety of touch, the Peach being very easily blemished when ripe. The crop should be looked over every day, placing the fingers gently behind those fruits that appear the ripest, and if with a gentle pressure from the branch the fruit does not easily

separate from its stalk, leave it for another day. Each fruit should be carefully laid upon its base in a basket, the bottom of which is lined with wadding covered with tissue-paper, the fruit being regulated so that one does not touch another. It is well to gather Peaches and Nectarines for dessert six hours before they are sent to table, and leave them in the fruit-room to cool. Nets are sometimes fixed, and the fruit allowed to drop into them, but Peaches should never be allowed to drop if it can be prevented. It is, however, best to use such a precaution, to save any that may drop from injury.

Peaches keep a good many days after they are ripe in a cool place. In 1865 I kept such tender-fleshed varieties as Noblesse and Bellegarde for twelve days in close tin boxes placed in an ice-house after they were quite fit for table, and then exhibited them in Edinburgh. Nectarines keep fully longer in this way.

PACKING PEACHES TO BE SENT TO A DISTANCE.

When Peaches have to be sent by railway and other conveyances, great care is necessary in packing them. The safest way is to have tin boxes divided into compartments $3\frac{3}{4}$ inches square and 4 inches deep. In the bottom of each division put a little fine paper-shavings pressed down. Wrap each fruit carefully in a piece of tissue-paper, then set it on its base on a square of cotton wadding, which fold up over the fruit, taking each corner between the fingers and thumb, and drop it carefully into its place. There should be sufficient wadding round each to prevent oscillation. Over the whole surface of the box spread some fine paper-shavings, so that when the lid of the wooden box, into which the tin case should fit tightly, is screwed down, the shavings may press sufficiently on the wadding to keep all steady without bruising the fruit. In this way they can be sent long distances without the slightest damage. Peaches and Nectarines to be sent in this way should, however, never be over-ripe. Indeed they should be gathered a day earlier than when they are sent direct to table from the garden.

INSECTS.

Red-Spider.—I have never found much difficulty in preventing red-spider from gaining much of a footing on Peaches. Cleanliness in connection with the wood-work, glass, and everything else, the dressing recommended for the trees after they are pruned, and the syringing recommended throughout the forcing season, are the best preventives. When spider does make its appearance, attack it vigorously with clean tepid water from the syringe or engine. After the fruit are gathered a handful of flower of sulphur may be mixed with the

water. Peach foliage seems to thrive under the influence of sulphur applied in this way. This insect is easily driven off the smooth surface of the Peach-leaf, and vigorous syringings I have always found sufficient to master it when it did appear.

Green-Fly.—Green-fly is very easily destroyed by fumigating with tobacco, and its very first appearance, in however small numbers, should be the signal for exterminating it. I have known it destroy a crop very much when it got a footing when the fruit were setting. The trees should be dry the evening of fumigation, and the tobacco should never be allowed to burst into flame. The fumigation should not take place when the trees are in bloom.

Brown-Scale.—I never had to deal with this insect on Peach-trees but once. The trees were syringed after they dropped their leaves with water at 145°, and though the wood was coated with the insect, I never saw more of it after the syringing.

Thrips.—This is a troublesome enemy to Peaches when it attacks them. It cannot be said that the Peach is subject to thrips; but when plants infested with them are placed in Peach-houses—which never should be, but often is,—they spread rapidly on the Peach foliage. Fumigation with tobacco, on which some Cayenne pepper has been dusted, for a few successive nights, destroys it. Engage the trees freely after the fumigations to wash the insects and the smell away. When the fruit are gathered, thrips can be conquered by syringing two or three times with tobacco-liquor, made by boiling at the rate of 3 oz. of tobacco to a gallon of water. This should be applied late in the evening, and the house kept close for the night, so that the liquor may hang longer about the foliage.

DISEASES.

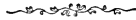
The Peach and Nectarine are singularly free from disease under glass in a good border, unless it be mildew at times on some varieties; they are rarely attacked with those diseases, such as curl and canker, which are so troublesome on the open walls. Gumming occasionally causes the death of a branch, and is often the result of a bruise or a tie that has been too tight and cut into the branch. When it appears to any extent, the best plan is to remove the affected branch at once. Mildew is the effect of over-dryness, and also of too much wet. Whenever it appears, dust the affected parts with sulphur, and if the border is dry, water it sufficiently to moisten the soil. If the cause is traceable to bad drainage it should be rectified.

D. T.

DAVALLIA MOOREANA.

THIS is one of the most beautiful Ferns that has been introduced into this country. It grows to a large size, and is of the most graceful habit, and may certainly be regarded as the king or queen of all Davallias. Although it produces fronds 3 feet in length, its subdivisions are so very small and numerous, and so beautifully green, combined with the triangular and graceful arching form of the fronds, that it is as really elegant as it is large. It requires stove-heat, and grows with great rapidity when liberally treated. I have found it do best in equal portions of fibry peat and loam, with a sprinkling of silver-sand and charcoal. It requires a good supply of water when growing vigorously, and an occasional watering of weak dung-water. It requires to be grown in a wide-mouthed pot to give it room to extend and throw up its vigorous fronds. Wherever there are half-a-dozen stove Ferns cultivated, this should be one of them, for it is not only beautiful as a large specimen, but most useful as a decorative plant for rooms when in small pots with only half-a-dozen fronds. It will be very extensively cultivated ere long, the same as common *Adiantums* for decorative purposes. The segments are so minutely and neatly subdivided that it is most suitable for bouquets, and intermingling with cut-flowers in vases.

D. T.



HYBRID RHODODENDRONS.

EVERY year the true admirers of beautiful plants are becoming more and more enamoured with the splendour displayed in hybrid Rhododendrons. Their utility in the open ground as decorative plants is so well known that any comment by us would only be a superfluity.

When the weather proves favourable to their proper development out of doors, the effect is simply magnificent; but under the protection of glass—no matter about the weather—in them we have an embodiment of much that is lovely, chaste, and noble, to an extent exhibited in few other flowering shrubs. These eminent qualities are not alone the means of commanding such universal esteem; to their credit we must add that they are exceedingly tractable in the forcing-house, besides the unusual length of time they may be had in flower throughout the year. For example, with us this season, from New Year's Day to Midsummer Day, we have had an uninterrupted display under glass—not a break in the succession of bloom, one variety or other having its offering of flowers daily for the bouquet. Now, without saying more by way of commendation, we shall advise those who have not a collection for their conservatory to form one at

their earliest convenience. Further, for the edification of those of our readers who happen not to be acquainted with many of the best forcing varieties, I shall enumerate and describe a list out of which they need not hesitate to select or take at random.

VARIETIES OF THE WHITE TYPE.

Mrs John Clutton: A most chaste variety, and for delicacy and general finish hard to surpass; flowers glistening white, delicately suffused with blush; the upper petal is stained with reddish brown, succeeded by other markings of canary-yellow to the top of a small blotch. What enhances the effect of this flower is the presence of two uniform small round reddish spots, one opposite the other, situated exactly in the middle of blotch near the margin; form of flowers round, while the truss is handsome, bold, and tapering.—Minnie: Another of the first merit; the truss a model to imitate, showing a striking airy grace difficult to describe; flowers a solid glistening white, tinged blush. The blotch is a chief characteristic, being composed of closely-set markings of crimson brown, strong on the centre of upper lobes, and extending to the two which join it, one on each side.—La Vivandière: This forms a delicate airy truss of pure waxy-white flowers, mottled above with greenish yellow; pretty.—Concesum: White, strongly suffused with rosy blush; has great flattish flowers; upper petals strongly marked with brownish-red pencillings washed over with yellow; truss extra large, of conical shape, very graceful and showy.—Mrs Mangles: Flowers campanulate, of sparkling French white, with a feathery outline of maroon touches reaching from the centre petal on to those on each side; truss rather loose, but large.—Lady Godiva: White, with a bold marking of brisk yellow overspreading two parts of the centre petal; texture good; form flattish, but strikingly fine in outline.—Sultana: Twin sister to Lady Godiva, with perhaps the difference of appearance in her favour, having rather a cupped flower and more rounded petals or lobes, and markings of brownish yellow.—Madame Masson: Delicate pure white, with a marking above of pale-green spots; truss medium size; exceedingly pretty; much admired.

VARIETIES OF LILAC SHADES.

Black-eyed Susan: One of the most distinct and fine sorts, with bold large flattish flowers of a violet-purple cast, changing to a lighter hue towards the base of the corolla; its blotch is very conspicuous owing to its density of colour; the centre of the uppermost segment is dotted closely over with deep maroon touches, which extend to the segments on each side, where the marking is less distinct; again, over

these markings is a coat of shining black ; the truss is unusually large and effective, though rather loose.—Prince Albert : Centre of flower white, with a broad margin of mauve-purple ; upper petal centre thinly washed with pale-green ; a mottling of the same cast of green is diffused along with others of brownish-red ; flowers good substance ; truss handsome, deep and pointed at the apex ; elegant build.—Sherwoodii : Colour violet-purple ; neat cup-flower and truss ; upper portion of flowers marked by feathery tracings of maroon.—Stella : Blush, suffused with purple ; stained and mottled maroon on upper segments ; great flower and truss ; somewhat resembling Black-eyed Susan. —Mazanere Panache : Colour violet-purple ; upper portion densely stamped with maroon pencillings.—Everestianum : Blush-lilac ; the centre of upper petal furnished with a pear-shape blotch of dullish white, which is mottled over with dusky yellow ; the margin of corolla prettily crimped into a neat frill ; splendid truss.—Fastuosum Flora Pleno : A double flower of rare appearance ; colour violet-blush ; flowers flattish (supported by stout lengthy footstalks), of extra size ; truss of immense bulk, but a little loose.

VARIETIES OF ROSE AND BLUSH SHADES.

Perspicuum : Rich blush of glistening waxy texture ; a neat little flower, with upper petal mottled and blotted greenish-yellow ; very distinct.—Exquisite : A sort quite in keeping with the name ; flowers rich cream, suffused with blush, with deep orange markings on the upper segment ; grand cluster tapering towards the apex ; a charming build.—Prince C. de Rohan : A magnificent crown of rosy-white flowers ; solid waxy substance, with a narrow crispy frill around the corolla ; upper part stamped with a triangular blotch in closely-set mottlings of dullish vermilion, touched here and there with pure vermilion ; first-rate.

VERY DARK SORTS.

The Black Douglas : Somewhat resembles Joseph Whitworth, but shows more deep crimson, and more dwarf in habit ; it is also very late, and therefore ought not to be forced early or severely ; one or other ought to figure in all collections.—Grand Arab : Flowers ruby-crimson, campanulate, pencilled heavily with deep black thinly placed on the upper portion of corolla ; truss dome-shaped, extra.—Michael Waterer : Flowers large, campanulate, of vermilion-crimson hue ; upper petals feathered by mottlings of shining brownish-black ; margin of corolla of more faint shade, but very rich ; truss large and perfect ; one of the foremost of this section.—The Warrior : This is a very dark handsome kind ; the flowers are neat, proportionable, of solid glossy

cloth; colour maroon-crimson, with the throat thickly speckled with shining black, which spots get more dim towards the base of the flower; truss compact, good build.

VARIETIES OF THE ROSE SECTION.

Euclid: Flowers medium size, cupped; colour brisk rose-pearl, upper petal freckled sparingly with brown; neat truss.—Narcissus: Rosy blush, freckled closely with dark-brown halfway up the petals; a large handsome crown of flowers.—Atrosanguineum: Corolla campanulate; deep lobes; substance good; colour rosy crimson; interior mottled halfway up with black; more conspicuous on the upper portion; pretty.—Brayanum: Delicate rose-blush, with short obtuse lobes without a stain; pretty.—Barclayanum: Delicate rose, sparingly mottled with lively brown; corolla divided into six well-rounded segments, campanulate.—Hendersonii: Throat dull white, suffused with purple, margined by a broad band of rose-purple; the upper petal furnished with mottlings of deeper shade of same colour.—Mrs John Waterer: Delicate rose colour, deeply shaded above by violet-purple; dark pencillings strongly defined on centre of superior segment; fine.—Regalie: A grand flower, quite in keeping with the name; colour dark rose, with a few stray mottlings of deep brown on the upper petals; texture leathery and shining, bell-shaped; truss extra large, dome-shape.—General Wilson: Pale crimson, with dark pencillings scattered over uppermost part of corolla; both flowers and truss neat and compact.—Iago: Has flowers perfect in form, of extra texture, which last in condition a most incredible time; colour brilliant rose-crimson, with a visible dash of maroon incorporated; the throat strongly marked by dots of brownish-black.—Madame Fitzgerald: A most dazzling rose of deep hue; corolla cup-shaped, marked on the uppermost petals by small brown spots; truss moderately large, dome-shaped.

Cultural Hints.—Most people are acquainted with the proper mode of outdoor treatment. In short, their whole requirements are comprised in being planted in good rich peaty soil, well drained, screened from cutting blasts, and if possible in some measure shaded from the mid-day sun, with an open sky above. This, with copious supplies of water while making wood, is about all they need. Now let us suppose it is autumn and we have a goodly number of plants in full bud, some of which we desire to force a little for conservatory use. We should at once select what we require of those known to be the earliest, have them potted into well-drained pots and put under glass, with no artificial heat until New Year's Day. The soil should be of equal parts turfy peat, leaf-mould, and a portion of loam and old reduced

manure. Although the plants are at this season in a semi-dormant state, their roots ought to be moderately supplied with water and the soil never allowed to get very dry.

Early in the year, when forcing commences, water must be copiously given, with occasional syringing over the foliage; the air also must be kept in a humid state, and all the sunshine going admitted to them; temperature 50° to 55° for the first week or two, then a rise of 5° more as the month advances. This quiet mode of procedure will secure much better results than severe forcing. We make no allusion to any of those very early forcing sorts which are expected to blossom at the end of the year. When the flowers begin to open, exchange their places for others, and put those flowering into the show-house; and when they have done duty in the conservatory, return them again into heat to complete their growth, supplying water always without stint.

What to avoid.—Avoid keeping the plants longer in heat and moisture than is necessary to complete the first set of growths, unless wood and not buds is the aim, but rather shift to a cool house and lessen the amount of water given. Avoid putting the plants into some sheltered corner outside to “ripen” their wood while they are yet tender in leaf, which will suddenly put the plants to premature rest, which is sure to cause rusty foliage and shoots without buds. June is quite soon enough to prevent disappointment. At this period they may either be retained in their pots, or, if much pot-bound, planted into the open ground for the time being.

A. KERR.



COVENT GARDEN MARKET.

FROM OUR LONDON CORRESPONDENT.

MANY horticulturists will now be wending their way towards the great metropolis, and those who have not already done so should avail themselves of the first opportunity to inspect the great fruit and vegetable market of Covent Garden. Here the garden and its produce may be studied from either a cultural or commercial point of view; and though I often visit “the market,” I never do so without adding some amount of knowledge to former experience. A stranger cannot but be surprised at the immense quantity of fresh produce brought from around London to this central depot every morning. Huge waggon-loads of Cabbages, Cauliflowers, and Turnips, together with van-loads of decorative plants, come in every night, or early in the morning, from the market-growers: while, during the autumn months, fruits such as Apples, Pears, Plums, Gooseberries, and Currants are brought in by

the ton! Fruit is carefully packed in punnets, sieves, boxes, or hampers, and generally reaches here in good condition, some of it being of the very finest quality. Here, in the "Grand Row," may be seen Pines, Grapes, Peaches, Figs, and Melons, of superlative excellence, fit to grace the dining-halls of royalty: rare exotics from every clime, either loose or tastefully arranged in bouquets, perfume the atmosphere, and enliven the stands of the florists. Orchids, Roses, and other flowers—the choicest productions of a thousand gardens—here find a ready sale. Fruit and flowers of the very best description may be readily disposed of in Covent Garden at first-class prices; but mediocrity does not pay so well, being more largely represented. Many gardeners who live at a distance have been disappointed at the prices realised by their agent in London; but I have invariably found that really fine fruit or flowers fetch remunerative prices, if sent early in the season, and carefully packed. The florists and fruiterers allow a better price for a regular summer and winter supply than for occasional samples; and in forwarding to market, care should be taken, in the first instance, to secure the services of a respectable agent or salesman. The demand for fruit, vegetables, and cut-flowers is pretty regular throughout the whole season, but prices vary greatly in proportion to the supply. Among the "stuff" at present in the market, we may notice some extra fine Tomatoes, and Asparagus of good quality. Decorative plants in pots are here by the thousand, forming, as they do, a distinct and rapidly increasing branch of the florist's business. They consist for the most part of Fuchsias, Pelargoniums, Ericas, Carnations, Heliotropes, and Spiræas. British Ferns also figure largely at this season of the year. Pot-plants are grown to great perfection by the market-growers near London, and are brought to Covent Garden in fine condition, packed in light spring-vans. The plants are arranged in tiers, one above another, and rarely suffer injury during transit. One notable feature about the decorative plants brought to the London market is their being grown in such small pots. Nice, bushy little plants, in large 60's or 48's, profusely covered with blossoms and unopened buds, are very readily sold, either by wholesale to the decorators, or retail to private customers. The finest fruit and flowers are in the handsome shops of the Central Avenue, and here the connoisseur with the most epicurean proclivities may obtain satisfaction in the way of choice fruit and vegetables in season. The bouquet department is always attractive, especially to fair visitors; and the most consummate taste and skill is evinced in the making-up of these fragrant souvenirs. Any one with taste in this direction may here study from the best of models; and all of us who are in any way engaged in the decoration of conservatories or apartments may gain much valuable

information. The demand for choice cut-flowers seems rapidly increasing, not only in the great metropolis, but also in other large towns. The great and increasing interest taken in choice flowers is a tolerably correct index of public taste and refinement; while the humanising employment afforded to hundreds by this increased appreciation of the pure and beautiful in nature, cannot but operate beneficially on the world at large. Here are bridal bouquets, tastefully formed of the most snow-like blossoms, that nestle lovingly among fresh ferns and mosses, and diffuse their delicate fragrance around us. Here are also Immortelles and wreaths for the decoration of graves and tombs, that remind us of friends "not lost, but gone before." We are right glad to notice this growing taste for beautiful flowers, since they appeal to the better feelings of all classes alike, and diffuse brightness and fragrance in many a happy home. It is also quite evident that a regular current of public opinion has set in in favour of herbaceous and other outdoor flowering-plants. Perhaps the coal question may have something to do with the increasing taste in this direction, but at all events it is quite certain that many hardy plants are now becoming sought after with avidity, that were but a year or two ago nearly lost to cultivators. One shop in the Grand Row makes a specialty of succulent plants in small pots, and very pretty objects they are for window-culture or for the Wardian case. These plants are specially adapted for the decoration of windows, since they succeed without the constant care and attention required by most other plants. Young plants of *Kleinea*, *Pachyphytum*, *Echinocactus*, *Mammillaria*, and *Cereus* are easily obtained, and soon make effective objects for any dry situation, either in the greenhouse, or apartment where other plants do not thrive. In conclusion, I earnestly advise all horticulturists interested in the commercial aspect of gardening to visit Covent Garden Market, and there see for themselves the varied produce of hundreds of the market-gardens scattered around the great metropolis.

June 22.



THE CHINESE AZALEA.

THE almost perfection of symmetry, and great brilliancy and purity of colour, to which the Chinese Azalea has been advanced, by patient breeding and high culture both in this country and on the Continent, have long secured for it a foremost position among decorative plants. Among the tribes of plants deserving to be described as gorgeous on account of glowing brilliancy and massive outline, the Azalea cannot be omitted from such a category. Their exceeding effectiveness is

not their only recommendation, they are most desirable on account of their pliant submission to a course of treatment which can easily insure their always desirable presence in full bloom in the conservatory or greenhouse for at least eight months of the year. We have for years in succession bloomed our earliest plants by the end of October, and kept up the succession till the end of June. Like Camellias they are acceptable at all times, but like Camellias they always appeared to us to be more delicate in colouring, sweeter, if the term may be applied, in late autumn, winter, and early spring than further on in the summer; and the time that individual plants last in these cool months may be multiplied by three as compared to those that bloom after March. We know of no other plant that charms so much from October to, say Christmas, either as a vase or dinner-table plant, as a well-bloomed small plant of Azalea.

We purpose detailing somewhat minutely our own practice in securing a succession of blooming Azaleas extending over the time above referred to.

Propagation.—Although the great majority of the finest and most useful varieties do not do so well on their own roots as when grafted on a few robust varieties which practice has proved best for stocks, it is necessary to raise these stock varieties from cuttings, and the method of striking them shall be briefly described. The old Phœnicea, Fielders White, and the old White are generally considered excellent stocks. To prepare stocks for grafting, select about the middle of July or any time before that, the required number from plants that have made an early growth, taking them about 2 inches long, and the wood of which is just beginning to change to a brownish hue, and become a little firm. After preparing these cuttings just in the same way as you would a verbena cutting, take a new or clean 8-inch pot, and fill it nearly half full of crocks, over the crocks place a thin layer of the most fibry part of peat or of sphagnum, then fill the pot to within an inch of the rim with equal parts peat and silver-sand, over this place nearly an inch of pure clean silver-sand, and the pot is then ready for the cuttings. Do not insert the cuttings too thickly; from thirty to forty in an 8-inch pot is quite sufficient. Plunge the pots to the rim in a mild bottom-heat and water them through a fine rose. If the propagating-house is a well-appointed one, it will not be necessary to cover the cuttings with a second casing, such as a bell-glass or hand-glass; but if circumstances are such that they cannot be placed in a house sufficiently close, let a few pots be put together under a glass case, hand-glass, or large bell-glass, as circumstances dictate. In about three weeks, with the ordinary attention of shading and watering, in a temperature of 70° to 75° at night and a gentle bottom-heat, each cut-

ting should be furnished with a whorl of roots. When these roots grow to about an inch in length, the cutting pots should be raised out of the bottom-heat to stand for a week or ten days before they are potted off singly into small pots. Pots from $2\frac{1}{2}$ to 3 inches in diameter are sufficiently large for potting them off. The soil should consist of two-thirds peat and one-third silver-sand in rather a fine condition. When potted, place them near the glass where they can have a brisk temperature for a time, till their roots reach the sides of the pots, when they should be gradually hardened off to stand the winter in an intermediate house. Azaleas struck thus from cuttings grow very freely, but many of the choicest varieties never bloom so freely in their early days when grown on their own roots, and often when they attain a considerable size, many of the varieties are very subject to go off limb by limb, and much time and labour is consequently lost, whereas the same sorts grafted on the stocks named bloom more freely and preserve their symmetry and health to a good old age; consequently we do not advise the propagation of such varieties by the method just described.

By the 1st of February, place the young stocks in a night temperature of 60° , keeping them near the glass. Increase the temperature 10° by sun-heat, and dew them over with a fine rose every fine afternoon. They will grow freely under such conditions, and will be 6 to 8 inches high by the 1st of April, which, unless in the case of those intended for standards, is a good height to graft at for general purposes. When two or three varieties are desired on one plant stop them when 6 inches high, and allow them to come away with three or more shoots. It will be a few more weeks before those stopped thus are ready for grafting. When the stocks have attained the desired height, take the grafts from plants that have been in heat sufficiently long to have fresh growing shoots from $1\frac{1}{2}$ to 2 inches long. Cut the top off the stock with a sharp thin-bladed knife at a point where it is about the same thickness and consistency in growth as the graft. Cut a "cleft;" or, in other words, split the top of the stock downwards about half an inch; round this cleft put loosely for the present a single band of soft matting; then cut the base of the tender graft into a wedge to fit the cleft in the top of the stock; fit the one nicely into the other, then draw the matting sufficiently tight to keep the graft firmly in its place, and the operation is complete. Place the plants at once in a moist warm propagating-pit, or corner of a stove, or any structure where there is a temperature of 65° , cover them with a propagating-case or common garden hand-light, and, if kept steadily moist at the root and shaded from the sun, in a month the union will be sufficiently complete for the tie to be removed, and the plants exposed by degrees to more light and air.

As soon as the graft begins to grow freely, it should be stopped, and

it will soon break into fresh growth with two or three shoots, which, as they make a few joints of growth, should be stopped in their turn, to break again with an increased number of leaders. They will be ready for a shift by midsummer at the latest. Those that are strong and growing freely will require 5-inch pots. Use the same compost already recommended, but with more of the fibry part of the peat in it, and by autumn they will make nice bushy plants. These, the following season, can be grown, with two shifts, into comparatively large plants.

This system is so simple that a thousand a-day might be operated on by two experts ; and we have found it so certain that it rarely ever fails, whereas grafting with the wood of the stock and graft in a hard-ripened condition is less certain and far more tedious in uniting. The young growing wood makes so perfect a union that in a year or two it cannot be easily detected. When standard plants are wanted it is best to grow on the stocks to the desired height before grafting, as they will attain it more quickly than if grafted and the graft allowed to grow single stemmed to the desired height.



STONE FRUITS AND HARD SOIL.

It has often occurred to me, while observing the fruit trees growing on the walls of houses in many of the villages throughout England, especially in the southern districts, that the firmness of the soil has much to do with the longevity, hardiness, and fruitfulness of these trees, which are generally loaded with fruit of very fair quality. There is little attention given in the way of cultivation ; all the training they get is a cut here and there to prevent the young branches from pulling the old ones from their fastening. They must have grown apace at some period, as large breadths of mason-work are covered with single trees, such as are not met with in many gardens. In this locality (Oxford) Apricots have been famous for many years, and great crops have been gathered ; and the industrious villagers have often been able to pay their rents from the old trees on the ends of their houses. It has appeared to me in most cases that these veterans have been planted with very little care—probably a hole has been made, enough to twist the roots into, and the soil replaced over them, and rammed down as if to form part of a floor. The hard-trodden gravel (in many cases causeway and pavement) would lead one to suppose that moisture could never reach the fibres, but I suppose the fibres must travel to the moisture ; a wide street is generally the space where the border should be. Other trees have the usual outhouses standing over the space

where the roots are supposed to find their food. It is evident there must be food, or where is such fine foliage and luscious fruit manufactured? Vines are met with often growing under the same circumstances: one on a tradesman's house in a town not far from here is something wonderful in its way—the kind is the black Esperione. I am told that it has produced heavy crops for many years past, and this year the bunches almost touch one another. There are only a few inches of open space between the pavement and base of the house front wall. The pavement and causeway together, between the Vine and the street, may be twelve feet wide, yet this Vine luxuriates, and supplies its owner with plenty of fruit, which is used generally for wine-making. Without discussing the matter further, is there anything we can learn from these trees, which are more productive of stronger constitution, and less liable to disease than the finest-trained trees under the care of some of our most distinguished gardeners? From experience, I believe that the firmness of the soil prevents over-luxuriant growth, inducing the roots to become a mass of healthy fibre, instead of their sending out large soft feeders, drawing up large quantities of water, which remains in the branches till the short dark days of winter. No fruit buds are matured; the buds start early into growth long before they are safe from frost. The sap, which has been flowing freely, receives a check; nothing is seen at the time, but before summer has advanced very far, a large limb (perhaps the healthiest looking in the tree) dies off suddenly; it is cut out, other branches die off in the same way, and the poor tree is sadly deformed. Cases similar to this are met with all over the country, and yet we have found no preventive. One thing I would suggest to young planters is,—never accept a tree which has been often cut back in the nursery, or one which has not been properly cut. When pieces have been left, the branches are always liable to die back where these pieces have been attached. When the cut is clean and properly done, the bark will grow over, and the wound will heal up nicely. When planting is done, never use manure (except for mulching, to keep out frost or drought); let all the soil, after it has been prepared, be made as firm as a rammer can make it,—if stones are plentiful, so much the better; the soil may be placed over the roots, and made only moderately firm. Endeavour to get the tree to start freely, and use the knife only where it cannot be avoided. When the roots have run a little, they will come in contact with the hard rammed soil, and will throw out fibre in all directions, which will cause the tree to grow sturdy, and the young wood will become very hard. When any shoot takes the lead, and is likely to monopolise the whole growth, take off a joint or two at top, and a number of small shoots will spring up; train them over the empty space,

and the foundation of a sound tree will be formed. Avoid the use of the knife in winter if possible, and if root-pruning should become necessary, let it be done early in the autumn,—but examine the roots first at one side, taking off none except they may be going downwards, or away from heat and air,—replace the soil (or fresh loam instead), and ram it as hard as possible under the roots, and lay every fibre carefully in its place, and cover them over as before. A very small portion of the tree thus treated will be enough to check unnecessary growth, and large firm leaves, plenty of natural fruit-spurs, and a hardy tree, will be the reward. The cutting round the whole tree with a spade, as some have done, is reckless and mischievous in the extreme.

If too rich soil should be the cause of watery growth, lift the tree and mix some lime rubbish in the earth; ram it down, and lay out the roots over it, and place 6 inches of loam over them. This should be done as the leaves are about to fall in autumn.

Speaking of the Vine, how often do we see promising young rods bear well for a few years, their roots filling the porous border. They begin to fall off: extra top-dressing is given, shanking goes on, red-spider destroys the foliage; yet all seems right at the roots. But careful examination will show that the feeders have found their way into a poor unhealthy subsoil, and as fast as fresh rootlets are made they die. The fine rich border is left behind, and all the manuring, watering, &c., is so much labour thrown away. The points of the roots are beyond help, so the vinery by degrees becomes a wreck. But if Asparagus-beds, or a free sound loam, is in the way of the roots, instead of unhealthy stuff, the Vines will not only remain healthy and vigorous, but be rejuvenated. The same applies to all trees, even to the Oak of the forest: a tree may grow luxuriantly for years, and at last begin to fail (hundreds around me are striking examples). If the cause was searched after, the active roots would be found far from the trunk, out of the reach of the famous loam which had made the gigantic tree, and struggling for an existence among material foreign to their nature. We should never despise the lessons which old trees in cottagers' gardens teach us, but search out the cause of their success, and it will be found that the roots are in their natural element; and the roots of our own trees (which are growing at railway speed) are in unusually rich quarters, where they will luxuriate till they bring about their own destruction.

M. TEMPLE.



ANTHURIUM SCHERZERIANUM.

ONE of the finest plants of this fine stove-plant I have ever seen is in the collection of Sigismund Schloss, Esq. of Bowdon, Cheshire. This plant bore seventy spathes when I saw it a week or two ago ; and the head-gardener, Mr James Campbell, informed me that it was not at its best, having, on one occasion, borne over 100 of its bright scarlet bracts. It was originally a very small plant, presented to Mr Schloss, along with other choice exotics, as a birthday gift ; and it would seem as if the good wishes of the donors to the receiver had, in some measure, been partaken of by the plant. Fine specimens of this plant are often shown by Messrs Cole & Sons, Mr T. Baines, T. M. Shuttleworth, Esq., and other well-known exhibitors ; but I have never seen the above surpassed in size, or in the number of its brilliant spathes.

F. W. B.

**DENDROBIUM BENSONIÆ.**

PERHAPS it is beyond question that we have not a more easily managed, a more beautiful, nor a more useful Orchid than the old and well-known *Dendrobium nobile*. It can be had in bloom from early spring, or even from the middle of winter, to the end of June. In *Dendrobium Bensoniæ* we have quite, if not more than its equal in beauty and duration of flower. And *D. Bensoniæ* has the recommendation of blooming from June till September, and thus so very desirably continuing a long succession of bloom from two of the most lovely and useful decorative Orchids in cultivation. It is scarcely possibly to over-estimate the beauty of *D. Bensoniæ*. It has precisely the same habit of *D. nobile*, sending up from well-established plants growths from 20 to 24 inches long, which, when well ripened, are clothed from bottom to top with its beautiful clusters of flowers. Any one who can accommodate eight or twelve plants of this *Dendrobe*, and an equal number of *D. nobile*, need never be without a fine show of their lovely blossoms from January to August ; for by getting them to make and ripen their growth, and resting them in succession, they are easily got to bloom in the same order, and so keep up a long succession of bloom.

D. Bensoniæ was introduced from Moulmein by Colonel Benson, after whom it is named. The flowers are large—nearly 2 inches in diameter when strongly grown. They are pure white except the lip, which has a rich deep golden yellow disc, with, generally, two large brownish-purple spots near their base. It, however, varies in its markings on imported plants, some being without the spots, and are in consequence not so effective. It is a deciduous variety, and does

with the same treatment as *D. nobile*. When making its growth it luxuriates in the East Indian house, and requires a good supply of water. The material in which it thrives is very similar to that generally used for *D. nobile*, viz., fibry peat, a little very turfy loam, and some sphagnum. When it has completed its growth it should have a decreased amount of water, and be inured gradually to a lower temperature to rest in. 55° is sufficient for it after it has ripened and shed its leaves, when it must be kept dry at the root, but not so absolutely dry as to cause shrivelling of the tissues. After resting for two or three months it should be introduced into a higher temperature, according to the time it is required to flower. But little water should be given until it shows signs of throwing up young growths from the base of the previous year's ones. When in bloom it will last for five or six weeks in beauty, in a moderate temperature and comparatively dry atmosphere. The proper time to shift it is when it is done blooming and beginning to grow freely.

ORCHIS.



A REMEDY FOR MILDEW.

A CORRESPONDENT, in your last issue, complains of his Rose-trees being attacked by mildew. Some few months ago, I was asked by a nurseryman if I could not make him some composition for checking it; and as dusting with flowers of sulphur is a somewhat tedious and wasteful use of material, I hit upon the idea of dissolving sulphur in alkaline, and thus use it as a dip or wash. I am of opinion, so far as a few experiments have gone, that sulphur is an effectual antidote to mildew—provided it be properly applied. Perhaps the following may be of some use to your many readers. Take, say, 1 quart of strong alkaline (which you can buy at a manufacturing chemist at $1\frac{1}{2}$ d. per lb.), and add to it 1 quart of water. Pour the alkaline solution into a glass or earthenware vessel, and bring it to a boil. Add, by degrees, flowers of sulphur (keeping the mixture well stirred); add sulphur till you can see that the alkaline will not dissolve more. This you will know by the sulphur depositing at the bottom of the vessel, or the mixture looking muddy. Allow to settle, and on cooling, pour the clear liquid (which is a full deep brown) into bottles, which ought, for its better preservation, to be corked. It is now ready for use. Take half-a-pint of this solution, and add it to 1 gallon of water. You can now either dip your plants or syringe them, whichever is the most applicable. Tobacco-water could be added—if it is of any use, which is doubtful, besides adding to the expense. The sulphur, although dissolved in the alkaline, is only loosely held, so that when plants are syringed

or dipped and exposed to the air, the sulphur deposits in most minute particles, and by that means easily gets at the enemy. The strong solution is a powerful caustic, and care ought to be used in handling it. Those who are desirous of trying the above, and have not the requisite apparatus, might get it made at any working druggist's or chemist's.

F. C. S.



NOTABLE PLACES.

THE GLEN.

THIS beautiful estate was purchased by Charles Tennant, Esq., the present proprietor, about twenty years ago; and since then various improvements have been going on on a very extensive scale in every department, and now it is one of the most lovely and beautiful places in the south of Scotland. The Glen is situated in Peeblesshire, about eight miles from Peebles, and three from the thriving village of Innerleithen, near which is situated the "St Ronan's Well" of Sir Walter Scott. From the latter the road leads across the Tweed, and to the right stands the old venerable mansion-house of the Earls of Traquair, said to be the oldest inhabited house in Scotland, and the church and village of Traquair: before entering which the road turns sharply to the right, crossing the Quair by a neat stone bridge, and leads along the north bank of the stream. On the north of the road the hills are both high and steep, and purely pastoral. To the south of the river the ground rises with a gentle slope, and for a considerable distance up the hill-sides the ground is well cultivated. The stranger in passing along this road has little idea of the treat that is in store for him at The Glen, and how near he is to it, when in looking at the surroundings the eye takes in next to nothing but lofty mountains on all sides. Passing on, the porter's lodge is reached, a neat substantial building, and over the gateway is cut in stone the word "Welcome," which shows to the visitor that he is not looked upon as an intruder by the generous proprietor. Here the roads part: the one leading to the right is used as a service road to the Home Farm steading. The approach from the gate is half a mile long, leading along in gentle curves, and is of the most delightful description, through a beautiful park of large extent and parallel with the river. Here the landscape is diversified with large clumps of Rhododendrons, and all the new and rare varieties of Coniferae, in groups, and planted out singly. To the left there is a fine lake, surrounded with shrubbery interspersed with winding walks. At the east end there is a pretty cascade, the rippling murmur of which is very pleasing in hot weather. The mansion-house is a noble pile, in the old Scottish baronial style of architecture. From it, in the distance, may be seen the hills that shadow the "dowie dens of Yarrow," and also the lofty Minchmoor Hills, over which Montrose fled after the battle of Philiphaugh. Here is also the scene of the fine old pathetic ballad "Lucy's Flitting." After the completion of his mansion, Mr Tennant had all the old cottages on the estate pulled down, and new and substantial houses erected in their stead, with all the newest improvements; and as soon as they were habitable, they were filled with his own work-people, who in their own sphere soon became participants of the goodness which Providence has bestowed on their kind employer. When Mr Tennant assumed The Glen, about twenty years ago, the community numbered 20; and now there

is a population of nearly 200. Mr Tennant has also erected a school-house for the benefit of those connected with the district, in the management of which, I understand, Mrs Tennant takes a great interest. From the position in which the house stands, and the ground rising pretty sharply towards the Flower-garden, advantage has been taken of it to form some beautiful terraces to the south and west. Rhododendrons and other rare shrubs have been planted in groups with good effect. If fault could be found in this department at all, it is in this: that too many early-flowering Rhododendrons have been intermixed with those shrubs, the buds of which seldom escape the early frosts. South-west from the house is the Flower-garden proper. This is surrounded by a very substantial wall of blue whinstone. Towards the south, and facing the mansion-house, the wall is semicircular, with abutments at equal distances. This wall has recently been planted, according to suggestions from Mrs Tennant, with the most approved sorts of hardy climbers, due regard having been made to have the foliage as well as flowers well contrasted. Another instance was brought under my notice in connection with Mrs Tennant's fine taste in those matters. She has had a large number of deciduous trees (of such sorts as change the foliage in autumn) planted in the most prominent positions all through the plantations. As they are not of any great size, the distinctive characters are hardly developed yet at a distance, but in time they must form grand objects in the landscape. Adjoining the mansion-house there is a very large span-roofed Conservatory, running nearly south and north, 90 feet long by 20 broad, and as the entire length of the inside of this house is seen from the windows of the mansion-house the effect is very fine indeed, as the plants in it are all in the finest possible health. The climbers in this house are remarkably well managed. Connected with the conservatory, and entering from it, are three span-roofed houses running east and west, which are to be converted into Plant-houses. Indeed, one has been done so already. In it I found some magnificent plants, such as *Cycas revoluta*, 10 feet in diameter, two fine Tree Ferns (*Dicksonia Antartica*), with trunks 8 to 10 feet high, and fine heads, *Areca Bauerii* (Palm), with fronds 8 feet long, *Latania Borbonica* (Fan Palm), 9 feet in diameter, *Croton angustifolium*, 4½ feet high and 3½ feet in diameter, a very fine plant of *Maranta Veitchii*, of large size,—a telling plant in any collection,—*Geonoma Schottiana* (Palm), 6 feet high, *Anthurium magnificum*, fine, *Croton variegatum*, 6 feet high and 5 feet in diameter,—beautiful plant,—*Nepenthes hybrida maculata*, 12 feet high, hanging with pitchers, *Maranta zebra*, good plant, *Anthurium Scherzerianum*, a most charming plant, just coming into flower, *Medinella magnifica*, with 30 trusses of flowers, *Pandanus utilis* (Screw Pine), 7 feet in diameter, in fine health, well-grown plant, *Sphærogyne latifolia*, 5 feet high, lovely plant, *Hyophorbe Verschaffeltii* (Palm), good plant. The other two houses in this range are a Fig and Peach house, and which are to be done away with as soon as the present crop is removed, and converted into plant-houses. The range close to the flower-garden contains the following:—Orchid-house, 30 feet × 10, containing a very select and well grown collection of Orchids, among which we noticed fine plants of the following:—*Ærides Dayii*, with four fine flower-spikes, *Cattleya crispa*, two fine plants of *Vanda tricolor*, *Vanda teres*, *Miltonia spectabilis*, *Ærides virens*, *Cattleya Loddigesii*, *Cattleya Mossiæ*, *Cattleya Dowiana*, *Oncidium Weltoni*, *Dendrobium nobile*, grand plant, *Dendrobium Dalhousianum*, and *Lælia Barkeriana*. Connected with this range are a very neat Heath-house, 30 × 18 feet, with a nice well-grown collection of Heaths, in the best possible health, a thing seldom seen nowadays, and another span-roofed house filled with *Calceolarias*, which, at the time of our visit (24th June), were in full flower. At this

place there is a very fine strain of this lovely plant, of a bushy dwarf habit and striking colours. Adjoining is a Pine-stove, half-span, 60 × 15 feet. The one-half is filled with smooth Cayenne. A good many were swelling their fruits, and promising to be of large size. The other half was filled with Queens, all fine dwarf stocky stuff. Adjoining this house is a Succession-pit, 80 × 7½ feet. At the back of the Flower-garden, and connected with another range, there is a very nice span-roofed Pine-pit, 30 × 14 feet, filled with Queens in splendid condition, many of them swelling off their fruit. Returning to the former range, there is a Vinery, 45 × 12 feet. This is entirely a Hamburg-house, with a very fine crop. Adjoining is a Muscat-house of the same dimensions, with a magnificent crop of fruit in it. Many of the bunches promised to be of large size and good weight. Returning to the former range, there is a large Greenhouse, 60 × 15 feet, filled with a miscellaneous collection of very nice greenhouse plants, among which we noticed the following to be very superior—*Erica elegans*, *Victoria*, *Austiniana*, *Aitonia superba*, *Cavendishii*, *ventricosa coccinea*, *Fairyana*, *grandiflora*, *tricolor Wilsonii*, and *tricolor coronata*. Adjoining the above, there is a span-roofed house, 50 × 12 feet, filled with *Azaleas*, *Camellias*, &c., of what may be termed half-specimens. The propagating department has not been neglected here, as there are ranges of upwards of 200 feet long, fitted up on the most approved principles. To the west of the mansion-house lies the Kitchen-garden, of 2½ acres in extent, surrounded with most substantial stone walls, with a rather sharp declivity towards the south. At the top of the garden, and on the back wall, there is what may be termed a late Vinery, 100 × 12 feet. It is to be regretted that this house was not made 10 feet wider, as from the luxuriance of the Vines, it is quite evident they would require all this scope to fully develop themselves. To the east and west of this house there has been recently added a Peach and Orchard house, 80 × 12 feet. I cannot conclude this notice without complimenting Mr Stewart, Mr Tennant's head-gardener, on his high skill and judicious management in every department. There is one thing I would like particularly to mention, and that is, that cleanliness seems to be carried out, I may say, to a fault: Mr Stewart seems to take for his motto that no tool gives so much satisfaction as the broom.

JOHN DOWNIE.

WEST COATES NURSERY, EDINBURGH.



NOTES FROM NEW ZEALAND.

[THE following has been received from a correspondent, and we publish it to give an idea of the state of horticulture in New Zealand.—ED.]

On Monday, 23d December, the summer exhibition of fruit, flowers, and vegetables in connection with the Royal Horticultural Society of Otago, took place in the drill-shed, Octagon. The show, on the whole, was not nearly so good as on former occasions. This may be attributed to the late hot and dry weather, and to the fact that the show was held on a Monday. Roses especially have suffered through the heat, being generally over-bloomed.

His Excellency the Governor, accompanied by Lady Bowen and two daughters, his Honour the Superintendent, and Mayor Pitt, attended at the hall and spent some time in the examination of the different collections. Some fine selections of music were performed by Messrs West, Reichardt, and Linn, during the afternoon, and also in the evening, when there was a large attendance.

The long tables in the middle of the hall, on which pot plants were shown, were a splendid blaze of colours, Pelargoniums, Fuchsias, Cacti, and other blooms being conspicuous. The principal attraction of the exhibition was the table bouquets, placed for competition by ladies only, for a silver medal given by the Society; and next to these was certainly the wonderful collection of artificial flowers, exhibited by Mrs Simons, floral artist, of Great King Street. Her collection of flowers in wax, paper, and wool, attracted general admiration. They were in great variety, and of the most exquisite workmanship, rivalling Nature herself. There were some fine attractive bouquets, and some showy table ornaments in the ladies' department. A special prize was awarded to Mrs James Smith for an attractive table ornament.

Commencing with the gardeners' department, in which there were three collections of greenhouse plants, the first prize was taken by Mr Clement with a fine Heath (*Erica Ventricosa Bothwelliana*), a *Ryncospermum jesaminoides*, a *Statice Hollfordii*, and a *Cactus grandiflora*. In ornamental foliage, Mr West, Mr Allan's propagator, came in first with a splendid specimen of *Begonia grandis*, the finest we have seen, measuring four feet through, and carrying large and beautiful leaves; a *Bambusa fortunei variegata*, *Dracæna terminalis*, and *Maranta zebrina*. Mr Martin was second with well-grown plants of *Dracæna guilfoila*, *Begonia Baronne d'Asternoff*, and *Sedum aziodum variegatum*. The Pelargoniums, which are always a showy and attractive feature in an exhibition, were well represented. Mr West took the first prize. In fancies, and plain, and zonal, Mr Clement stood first. In tricolor, zonal, and silver-variegated, there were only two exhibits. Mr W. Martin gained a first prize for Ferns, with very fine specimens. A specimen of *Mitraria coccinea* was shown by Mr G. Matthews, and a very fine collection of pot-coniferæ.

The amateurs were scarcely equal to the gardeners in any department, except perhaps in that of cut flowers. Some of their plants were badly grown, and not fit for exhibition. The most conspicuous plants in their greenhouse collection were a fine Heath and a Climbing-plant (*Abutilon*) by Mr Dobbie, *Mitraria coccinea*, a rare stone plant by Mr Shurry, and an Orange-tree in bearing by Mr Crawford.

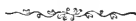
Of cut flowers, herbaceous plants, and bulbs, there was a fair display. Mr Sonntag was beyond all competitors, professional and amateur, in Roses, of which he had a splendid assortment, taking first prizes for twelve and eighteen varieties. He had also a large lot on exhibition, and some of them were greatly admired. He also took a first prize for a rose bouquet. Mr Shurry excelled in Carnations, Picotees, and Verbenas. There were many very pretty bouquets. Those of Messrs West, Milne, and Crawshaw, which were considered best, were carried off by Lady Bowen and her two daughters. Among the bouquets were three by Mr West, one of them a bride's, which were deservedly admired. Two of the best plants in the room, an *Erica Cavendishii*, and an *Abutilon*, were shown by Mr Dobbie for the second time, being still in full bloom.

Of the fruits the finest were the Strawberries. There were few vegetables, but those that were shown were very good, especially the Cauliflowers, Cucumbers, and Cabbages.

It is gratifying to find the Governor, his Excellency Sir George Bowen, on the Saturday previous to the above exhibition, bearing the following testimony to the rapid and prosperous advancement of the province of Otago and its capital, Dunedin. In reply to an address from the Mayor of that city, he said: "A quarter of a century has not elapsed since the 23d of March 1848, when the little band of Scotch immigrants first landed on the site of what is now a popu-

lous and well-built town, but which was then silent and uninhabited, and covered with a thick forest. But the single province of Otago, of which those honoured men were the founders, already far surpasses in revenue, in trade, in all the elements of national wealth, many entire colonies, such as Jamaica, Barbadoes, and Antigua, which have been settled for above two centuries. I congratulate you on the remarkable progress which Dunedin in particular has achieved."

Weather.—The weather in Auckland has been unprecedentedly dry and hot. The fruit season is magnificent, and the root crops have not been bad, but the hay harvest is likely to suffer from the drought. In spite of the close, damp heat, there is not any special sickness prevailing, probably on account of the coolness of the evenings. We observed, on glancing at the readings of the thermometer at the different telegraph stations of the colony, that on a recent occasion Auckland stood at 72°; Port Chalmers at the same time, 51°; and Dunedin at 57°—differences as great as might be supposed to exist between the temperature of Auckland and Borneo. But it is the character rather than the degree of heat which is chiefly to be considered; and Southerners visiting Auckland at this season find the dampness and heaviness of the air very trying. In the northern districts of Canterbury, owing to the hot weather, the grain in many instances is prematurely ripening.



REVIEW.

VINE CULTURE UNDER GLASS. By J. R. Pearson, Chilwell Nurseries. Journal of Horticulture Office, 171 Fleet Street, London.

This is a brief statement of what its author considers the cardinal points in Grape cultivation. His own success is guarantee for the soundness of the principles enunciated and the directions given. It is, of course, very elementary, but at the same time well calculated to be of much service to those who are seeking for information regarding the culture of the Vine.



PINK SOUVENIR DE LA MALMAISON CARNATION. — Mr W. Young has forwarded for our inspection another sample of this wonderful Carnation. It measures 3 $\frac{3}{4}$ inches in diameter—of beautiful symmetry. It is mottled and striped with a delicate flesh colour,—very much like the flower of a Balsam,—and is deliciously sweet.



Calendar.

KITCHEN-GARDEN.

As ground becomes vacant (much of which will be cleared of Potatoes, Peas, Cauliflowers, &c.), it should be filled up with crops which will be in use during autumn and winter. Kale, Savoys, Broccoli, &c., which may have been planted thickly, with the view of

lifting them, should now be taken up with their roots as entire as possible, and planted in their permanent quarters. Coleworts should be planted largely, and all space filled as well as circumstances will allow: large breadths of empty ground during autumn are

not creditable. Sowings of Stone, Strapleaf, and other Turnips should now be made for winter supplies; Potato-ground levelled will suit them well. All the main crops of the Brassica tribe should now be well established, and the hoe or prong should be used freely among them as long as there is room to work them. If any are showing symptoms of growing too rank, they might be well trodden down, and the hoe used for surface-stirring afterwards. This is a good time to make a full sowing of Cabbage-seed; good sorts should be chosen which are not liable to run to seed: Red Dutch may also be sown as required. A good store of Cabbage, placed a few inches apart on a nice border, to stand through the winter, are valuable for planting in spring—the middle of July being the season in the north for the main sowing, and three weeks later in the south; but a second or even a third lot will be of good service. When seeds are sown, it may be necessary to thoroughly soak the ground beforehand, say the night before, then sow next morning. Cauliflower-seed may be sown from the first week of the month to the third week. Three successions can be secured—first, for growing under handlights, plant protectors, &c.; second, to be pricked out in frames or potted into good-sized pots to prevent them being pot-bound; third, smaller plants pricked out on a sheltered border or ridge. Early Horn Carrots, Radishes of all sorts, Spinach (prickly and round), stand the winter well. Lettuce and Endive may be sown in quantity: plant out plenty of the latter for main autumn and early winter crops. Give abundance of water to Celery—a good mulching may do much to keep out drought and help the plants. If late crops are still to be planted out, the ground for them should be well soaked with water twelve or fifteen hours before planting is done, and all the roots the plants can carry should be lifted. These late plantations are often of great value. Earth up closely the Celery which is now wanted for use: when it is wanted thus early, as is the case in many

places, it should be brought forward in frames without check, when shade can do much to blanch it. The frames after middle of July can be at liberty for other things. Late crops of Celery should not be earthed up too early, but a little soil drawn from the ridges over the surface of roots will do much to keep out drought, the most formidable enemy of Celery. Thin Parsley, and plant out the thinnings for winter supplies. A ridged or sheltered space should be chosen to plant out a portion for protecting during severe weather. Keep Scarlet-runners well topped back; take off any pods which are running to seed, unless seed be wanted. This is now a good time to make a sowing of French Beans, to be covered by a frame in autumn. Portable plant-protectors are of great value for moving from one crop to another. Pits and frames emptied of Cucumbers, Tomatoes, Capsicums, &c., should not remain idle, now that the most of these crops are plentiful: outside plantations of French Beans or late Cucumbers in the structures might keep up supplies nearly to the end of the year. If weather should be dry, it may be necessary to mulch Peas: grass mowings do well for this purpose, but when full of weeds they are objectionable. Salads of all kinds should be kept up in abundance by frequent sowings. Tomatoes should be thinned, topped, and watered; keep them secure against wind. Vegetable Marrows and ridge Cucumbers should be kept regulated and thinned; too many fruit should not be allowed to grow on them. A framework made over a portion, and covered with mats at night, might keep these in full vigour much later in the season than they might if exposed to early frost. Gardens are now generally less infested with weeds than earlier in the season, and where labour power is sufficient, they should now be very orderly and clean: seeding of weeds should not be tolerated, if possible. It is much easier to advise than carry out in practice: with plenty of labour at command, keeping and dressing is very simple.

M. T.

FORCING DEPARTMENT.

Pines.—Queens intended to supply ripe fruit next May ought to have their pots well filled with roots and their

growth well matured by the end of the month. Avoid an over-abundant supply of water and air-moisture in

the case of these. Do not give them any more towards the close of the month than is just sufficient to prevent their receiving any violent check. Lower the night temperature a few degrees by the end of the month with the view of gradually getting them into a state of rest by the end of September. All syringing of these should cease. Sometimes there are suckers produced at the neck of these early plants, especially if they have been over-syringed; when these appear remove them at once. Late Queens intended to make a growth in early spring before starting should still be encouraged to make growth freely, as directed last month. Air these, and all other rapidly-growing stock, freely on warm sultry days, and do not give more fire-heat than is necessary to prevent the temperature sinking much below 75° at night, but gradually lower the night temperature as nights lengthen. Keep them steadily supplied with a moderate amount of water at the root, and air-moisture, and water always with weak guano-water. Suckers on those plants which have ripened their fruit will now be strong and ready to pot or plant out in beds. The largest may be put into 7-inch pots, and the smallest into 6-inch. Avoid the common error of crowding these closely together. If at all possible Pine plants should be allowed plenty of room from the very first, for if drawn up weakly from over-crowding it is difficult to make satisfactory plants of them by any after-treatment. Neither is it necessary to shade them much or to syringe them overhead so frequently as is practised in some cases. The pots for these should be well drained, the soil full of fibre and firmly packed into the pots. Plunge them in a bottom-heat of 85° to 90°, and when they begin to root and grow freely, air them freely on fine days. Where there is a stock of plants that were suckers on plants that ripened fruit in March and April, see that they do not get pot-bound, or they may start prematurely; give them a small shift before there is any risk of their starting. These may be induced to grow freely far on into the autumn, with the view of their being started next summer. The surest way of keeping up a constant supply of ripe Pines is to have a certain number of plants in a good many stages of growth. Fruit

swelling off will still require a good supply of moisture in both the soil and air. When more fruit ripen at once in hot weather than are required, remove them to a cool room, where they will keep much longer than if left in the pinery; any good suckers that are on them should be first taken off and potted.

Grapes.—Should the weather be hot and dry, late crops that are still swelling and near the colouring point should have another good watering, in order to keep them in healthy activity. Should a succession of damp dull days occur, keep a little heat in the pipes, so as to prevent a stagnation of damp air, so undesirable for Vines in all stages of growth, but most especially so when nearing maturity. Leave a little air on all night and increase it early in the morning to prevent moisture from condensing on the bunches. Muscats that do not appear to be colouring satisfactorily, should have their bunches exposed to as much light as possible, by tying aside a few of the leaves that shade them. We have always found this the most effectual way of colouring Muscats. After they are perfectly coloured, the shade of the leaves is again desirable. Keep ripe Grapes cool and dry. Wasps and flies are often very troublesome in Vineries this month. The best way is to keep them out altogether, and this can be done by fixing hexagon netting over the ventilation openings. Give Vines from which the fruit is all cut an occasional syringing, to keep the foliage clean and healthy. If there are any Vines that have their roots further from the surface of the border than is desirable, remove all the soil down to the roots and place a layer 6-inches deep of turfy loam, with a third of horse-dung and a little bone-meal in it, over them: such feeding entices them nearer the surface of the borders. Indeed, all borders of any standing are the better of being dealt with more or less in the same way every year. Vine roots that are near the surface, and not over 2 feet deep, always ripen and survive the winter better than when deeper, and this is a condition of immense importance, in early forcing especially. All pot Vines intended for starting in November and onwards till Christmas, should now be well ripened and almost ready to shed their leaves. If they are not in this condition, expose them

to full sun and a circulation of dry warm air, so as to ripen them as early as possible, but by all means avoid the starving into ripening process. Those that are well ripened may be removed outdoors to a cool place. Young Vines planted in spring will have filled their allotted space. If they in any case have not done so, encourage them still with heat and moisture, and allow them to make all growth that there is space for without crowding. Super-numeraries should not be allowed to make any additional growth after the middle or end of the month, but be exposed as much as possible to light, in order to mature their growth.

Peaches.—See that trees from which the fruit are all gathered are not neglected. These should not be allowed to suffer for want of water; and if they have their roots partially in inside borders where rain cannot reach, they should be watered. The foliage should be kept clean and fresh by occasional syringings in dry weather, and should red spider appear mix a handful of flour of sulphur with the water, so that it may settle on the leaves. Remove all superfluous wood not necessary for next year's crop at once, so that light and air can play freely about the foliage and wood. If the weather be dry give copious waterings of dung-water to trees swelling off late crops, until they begin to ripen. When more fruit ripens at one time than are enough for the demand, a quantity of them may be gathered before they are quite ripe and placed in a cool fruit-room. We have kept Peaches for fourteen days after being ripe, by placing them in close tin boxes and putting them in an ice-house. Keep the early-house cool, and should any repairs be necessary now is a good time to see to them.

Figs.—Give fruit that are ripening a circulation of dry warm air. The fruit should be gathered a sufficient time before it is used, to allow them to become quite cool. All trees swelling off fruit, either in large pots or restricted inside borders, will require to be well supplied with manure-water.

Do not neglect trees from which all fruit for the season have been gathered, but syringe them regularly every fine afternoon, so as to keep the foliage healthy to the last. Thin out all superfluous wood, as recommended in the case of Peach trees. As a rule it is not desirable to force a third crop from Figs. They are never fine in quality, and it ultimately tells on the trees.

Melons.—As late crops come into bloom attend to their impregnation. Those that are swelling off crops in Melon-houses or trellises should have the surface of the border mulched with a little rotten manure. In ordinary dung frames the fruit should be slightly elevated, so that they are exposed to the sun while ripening. Give occasional heavy waterings to those that are swelling off, but withhold it when they are full grown, for at this season especially they are apt to burst. More plants might be planted in Melon-houses for late crops.

Cucumbers.—Those that are in full bearing will still require a good supply of water. Any that show signs of debility from heavy cropping should have all deformed fruit removed, and be allowed to bring only a few to maturity for some time, which, with the aid of rich top-dressing and watering, will cause them to renew their strength. Sow about the middle of the month for winter crops.

Strawberries in Pots.—If the weather is dry, those that were shifted early into their fruiting-pots will require careful attention in the way of watering. Be sure that they are supplied with sufficient to wet the whole ball. Occasional watering with guano or dung-water will now be beneficial, especially to those in small pots. Remove all runners as they appear; keep them free from weeds, and see that they do not get crowded. If standing on ashes, and the roots are leaving the pots, lift them and rub off the roots that have left the pots. It is best to have them on boards or trellis-work, to prevent them rooting through.

Notices to Correspondents.

We regret that we are compelled for want of space to hold several papers over till next month. We beg to thank our correspondents for these contributions, which shall have our earliest attention.

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in the 'Gardener' to David Thomson, Drumlanrig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to, be forwarded by the middle of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

J. W.—The insect on the Vine leaf is black thrip.

AMATEUR.—Many circumstances may cause Grapes not to set and swell properly. We suspect, however, from your Grapes colouring prematurely in a small state,—the border being good,—that there is something amiss with the roots. Examine them and see if there is not an insect preying on them. What you describe is just what takes place in the case of Vines infested with *Phylloxera*.

A. C.—Under the circumstances you describe, no doubt early Grapes will prove most remunerative. If you can produce them in your climate with something like the same firing required to keep late Grapes, no doubt you will do best to get them in early, and catch the high prices.

SUBSCRIBER.—You can use about a bushel of the sample sent to each cart-load with advantage. The materials at your command will make a good border. Your soil being heavy, add lime rubbish liberally.

A LADY.—Commence putting in your Geranium cuttings not later than the middle of this month. Boxes 4 inches deep, and 2½ feet long, by 1½ feet, are convenient for the purpose. Fill them firmly with compost composed of loam two parts, leaf mould one part, and sand one part. Put sixty cuttings in a box. See that they are well drained. When the cuttings are put in set them in a warm place fully exposed to the sun, and keep them moderately moist.

S. Y.—You are keeping your Pines far too moist. Give more air and less water, and do not shade.

R. M.—The cause of your Grapes not colouring, we consider to be too heavy a crop, in combination with insufficient ventilation. It is too late to remedy the evil now. Crop light and ventilate more freely another year, and all other things being equal, the Grapes will colour better.

F. S.—Your Pampas Grass is starved. Give it plenty of good rich soil and water, and it will grow into a fine strong specimen and flower next year.

SUBSCRIBER.—Taking every point into consideration, *Vesuvius* is the best of the two Geraniums you name. It is an excellent one for beds and for pot-culture, and it flowers all winter profusely in an intermediate house. Indeed, we do not know of any other with so many good points.

W. R.—If your Azaleas have formed their buds, place them out in the sun for a few weeks, after the middle of the month, to get their wood thoroughly matured.

VITIS.—We cannot say: apply to the raiser.

W. BURTON, KENDAL.—There are a great many yellow *Violas* both in flower and growth that are not easily distinguished. The following three are distinct and most profuse bloomers, and are sure to give satisfaction, viz., Golden Perpetual, *Lutea Major*, and *Lutea de Massipp*.

W. MANSON, NAIRN.—The following 6 light and 6 dark *Phloxes* are really very fine, and will suit your purpose well: 6 light—Lady Napier, Miss Hunter, Mrs Thom, Mr G. Wilson, John Watson, and Miss Baillie. 6 dark—John Cumming, Othello, The Shah, John Baillie, William Blair, and John M'Donald.

R. S., MORPETH.—Blue King and Blue Gem are purely bedding *Pansies*.

NEEDHAM MARKET, SUFFOLK.—Will one of your numerous subscribers inform me as to the subdivision and general management of Ferns in a common greenhouse?

EDWARD DOVE.

THE GARDENER.

SEPTEMBER 1873.



REMARKS SUGGESTED BY A HORTICULTURAL TOUR.



THE last few decades of the present century have been strikingly characterised by perseverance, energy, and material progress. The commerce of nations, and of Britain in particular, has been developed and augmented until it has assumed proportions which the most clear-sighted and sanguine of prophets failed to anticipate thirty years ago. With this gradually rising flood of prosperity and wealth, many citizens have risen on the tide of their affairs from conditions of very limited means and dependence to be men of easy circumstances, and capitalists, and have provided themselves with country homes and country domains and gardens. Into their gardens and gardening they have brought the same energy and application by means of which they have placed themselves in the position of owners of gardens. To this class—the backbone of the country's greatness—horticulture owes much of the rapid development in which it has pretty well kept pace with material expansion. Those who are not acquainted with the vast extent to which our cotton and iron lords have embarked in horticulture, can form little idea of the gardening that is going on within a radius of twenty miles of our rich and great centres of commerce. The places to which reference is now made have grown up with mushroom-like rapidity; and, as in commerce, the owners of such gardens are apparently never wearied of aspiring higher and higher, and extending into every branch of horticulture, in many cases regardless of expense.

Without depreciating in any way the gardens of the old and stately homes of England, or the measure of progress that has characterised their career, there cannot be a doubt that gardening, as it now exists, owes very much of what may be termed the judicious and good to gardens of somewhat modern creation, while they may at the same time be blamed for some features that are glaringly undesirable. Generally speaking, such gardens as are now more particularly referred to reveal a great amount of well-directed energy in the matter of good cultivation. Plenty of good Grapes, good Pines, and other fruits, judiciously selected and well-grown flowering-plants, as well as plant structures of the most substantial character, combined with every modern invention in their construction and working that renders them perfectly fitted for their purpose, are to be met with in such gardens. Beyond all question England's greatness in gardens owes much to such establishments. Some of them take rank in this respect with the very foremost of the gardens of England's ancestral halls and palaces; and all true lovers of horticulture must wish that their multiplication may go on unchecked, to yield as they do, their inexhaustible fund of interest and recreation to their toiling owners.

As in connection with progression in everything, there are questions which arise in connection with this widely spreading horticulture. In all this gardening bustle, and something like impatient progression and extension, are there not to be found blemishes,—signs of very questionable taste, or rather absurd violations of what has been recognised as good taste, that are often very strikingly apparent, especially in comparatively small grounds? To a certain extent it must be admitted that a proprietor has a right to do with his own whatever he chooses, so long as he does not impair the comfort or pleasure of his neighbours. It must also surely be admitted that this is a very narrow view of the case, and one which strikes entirely at the root of every standard and acknowledged rule in taste and the fitness of things.

This is opening up a wide field, and one which it might be difficult to wade through. But narrowing the question for the present, we would remark that from our standpoint, and after long observation, it occurs to us that one of the greatest evils by which the more recent gardens are characterised, speaking generally, is sameness, and the utter want in so many cases of recognising and acting on the distinctive natural capabilities of individual sites on which dwelling-houses are built and gardens laid out; but instead of this, a complete want of harmony between the natural position and the gardens themselves is produced. This in the first instance, and the complete obliteration of all repose in the grounds, by trying to crowd every

known thing in gardening and garden design into a given space which may only be adapted for one or two properly carried out, is one of the greatest monstrosities of the present day. The trying to copy in a small garden what is only adapted for a large one, is productive of an abortion. We heard this idea more completely floored by a single remark than could have been accomplished by a day's argument, in the case of a lady who, in the act of viewing a large garden and one of singularly varied yet harmonious features, which, in as far as they were artificial, the natural grounds had suggested, and all hemmed in by a magnificent range of wild wood and hills, said, "We must just imitate this as far as we can;" she was replied to by a gentleman who knew the utter folly of the attempt, "Yes, go home and put on a cart and get in the mountains." No remark could be more pithy and to the point, as telling against the absurdity of spoiling any garden-site by attempting those features in designing which natural position protests against.

Concentrating our remarks a little more, it appears to us that the most objectionable thing in relation to small gardens is the entire destruction of anything like repose in the attempt to crowd too much into small policies. This vain attempt to copy from other and quite opposite places every conceivable feature, where only one, or at most a few, would be appropriate, fritters out of existence that easy grace and repose which nothing else can make up for. From such gardens it is a great relief to escape to the open common or park, to look on a stately tree or graceful shrub standing free from some trumpery accompaniment which mars so much their beauty. Many illustrations could be given of grounds that might otherwise be massive and imposing, but which have been tortured into unmeaning mazes by a crowd of intricate and puerile designs and combinations. Perhaps no more striking illustration of the utter want of ease and repose in any one portion of a garden could be cited than the Royal Horticultural Gardens at South Kensington: viewed from any point that can be chosen, there is not one single feature of ease and repose. The space is besmeared all over with intricate designing, and it scarcely ranks in respect of merit with a modern cemetery. In the centre of the Royal Botanic in the Regent's Park, and looking either to or from the large conservatory, there is, on the other hand, to be found that breadth and repose, surrounded by easy and graceful lines, which to our mind is worth a thousand gingerbread and misplaced designs. These remarks are principally applicable to the main features of a place. To a certain extent the same principle holds good in the minor details of a garden. As, for instance, in the laying down of a series of flower-beds in the close vicinity of perhaps some previously established features in

the shape of a stately tree or graceful shrub, features which should be held far too sacred to be encroached upon or blurred by any paltry bed of evanescent flowers. Take as a public illustration of what we mean by this the long series of flower-beds which skirt Park Lane in Hyde Park. These beds form a far too crowded, continuous, and monotonous string of flower-beds, more like a nurseryman's trial ground than a flower-garden. To our mind the turfing up of half the beds here would improve its appearance very much, and give it some repose in the shape of more greensward. But our special object in this case is to point out the "studied insult" which has been offered to the forest-trees in this bed-making in Hyde Park, by placing round their trunks small butter-pat circles of such as *Alternantheras*, *Verbenas*, and paltry succulents. It is to be regretted that here every place where there is room for a bed has been thus nibbled up, and it is a pity that any such misplaced beds as those round the base of the forest-trees should be exhibited in so public a place, to be perhaps copied by others. It is, however, so outrageous an insult to the majestic trees, that there is not much risk of its being largely copied. The spaces of green turf preserved round these trees would have given some repose where it is much wanted. This crowding of all natural features out of any given piece of ground by the everlasting fritter of tiny beds, is surely no sign of progress; on the contrary, it reveals a vitiated taste in gardening which should not be encouraged, and we mention this public exhibition of the thing as illustrative of what is undesirably common in laying out smaller places nowadays. In making a garden on perhaps an acre or two, there can be no greater mistake or abuse of a subject than the attempt to have a lake because So-and-so has one, to have a hill because So-and-so has a hill, or to have a dell and a rockery because somebody else has a rockery and a dell, and attempt a chromatic display of whirligigs as well, and all this without taking into careful consideration the natural capabilities of the site itself.



USING STONES IN POTTING.

HAVE any of your readers ever used stones purposely in potting such things as Vines and Pines? It is the custom to pick these carefully out of the compost before using it; and I confess, myself, to a prejudice against them hitherto, though I am not prepared, I must admit, to give a very good reason for the same. I am led to ask the above question from an idea which occurred to me the other day when examining the roots of a Pine-Apple plant which had been turned out of the pot. As has often been observed in the case of potted plants, the roots were all at the side of the pot. Just to see how far they had availed themselves of the body of soil between the stem and the pot, I poked the soil out at the bottom of the ball from the top. So few were the roots,

comparatively, that this could be done easily, leaving just the skeleton of the ball—a thick mat, which had formed at the sides of the pot, and inside nothing but a few strong roots radiating from the stem of the plant to the outside of the ball, where they had congregated and thickened, without the least disposition to turn back and take advantage of the bulk of rich soil they had left behind. I estimated that the roots had availed themselves of about one-third or one-half of the soil in the 12-inch pot, living principally—after they had eaten the strength out of this—upon the nourishment supplied in the waterings. No doubt it was observation of this kind which led to the practice of shifting plants forward by inches, in order that the roots might be compelled to eat their way through in a regular manner; and there is reason in the practice, though in the case of the Pine-Apple the many-shift system is not a good one. Still, if by any other practice we could produce the same results it would certainly be advantageous. If a good plant can be grown in a 12-inch pot upon only one-half the diet supplied, it would doubtless be a much better specimen if it could be induced to take it all; and a 10 or 12 inch pot contains no more soil than a strong Pine-plant requires, but it is unable to avail itself of the store under the circumstances, and it is therefore lost. It is the same with pot-Vines and other plants, but to a less extent, perhaps; for the Pine has a very bad habit of warping its roots round the sides of the pot, especially when it is potted loosely. It would appear, therefore, that to make the roots occupy the soil in the pot regularly as they progress, they must be obstructed in their passage. Hard potting will do this to a great extent, but it is not entirely effectual in preventing the majority of the roots from establishing themselves at the side of the pot. It seems to me, therefore, that a fair proportion of stones among the soil would effectually bar their direct progress. Round boulders would be too bulky, but flat slaty stones, introduced vertically here and there between the stem and the pot at potting time, would necessarily cause the roots to break up into branchlets and seek a more roundabout way to their ultimate destination—utilising, at the same time, the body of soil at their disposal, which they would otherwise have disregarded.

Supposing we could accomplish the end in view, it seems certain that less-sized pots would do, and two pots of a given size would give better results. I have frequently noticed, as others must have done, that the ball of an old Pine-plant, when squeezed with the foot, would burst its skin, and the contents, soil and bones, scarcely touched with a root, would fall out in much the same condition as when the plant was first potted, except that the bones in the soil were just in that state in which the roots like to find them for immediate use.

J. S.



FLOWER-GARDEN NOTES.

NOTWITHSTANDING all that has been said and argued, with the aid of some reason and a good deal of ridicule, against the prevailing style of flower-gardening by means of masses of colour in flowers and foliage, the fashion seems to be gaining ground rather than falling away. It seems to gather strength from persecution; it becomes richer in detail and more refined in execution as materials accumulate and improve. Spring-bedding takes the form of massing with the materials which

will suit the season ; and winter-bedding is the same thing with shrubs of varied shades, and we yet expect great advances to be made with shrubs in winter-bedding.

It is in summer and autumn that the greatest display of colour is possible, and must be made, as nature is then in full dress, so that the trimmings and ornaments must be of the brightest hues, lawns and shrubberies being in their freshest green, and deciduous trees in full foliage. Beds and borders must be embroidered in the brightest colours, else the effect will be tame and monotonous. At no other season can colour-gardening be indulged in with so much satisfaction and profusion, and surely the most should be made of the opportunity. We have six months of the year cold, dull, and all but flowerless, and surely we may be pardoned the effort to make the other six months as joyous and bright as possible.

We propose noting a few combinations of colour, or rather of plants, which we have found very effective, in the hope of drawing out suggestions from other correspondents ; but before doing so shall review some of the materials used.

Apart from plants with coloured foliage, Geraniums still hold the first place for producing effect, and the best among a great many is Violet Hill Nosegay ; the next best is Vesuvius ; Lady Constance Grosvenor holds a foremost place. Charley Carbon is first-rate with us, being very dwarf, with a bold truss of flowers, petal broad, and of a brilliant dark scarlet colour. Indian Yellow is also first-rate in poor soil. Jean Lisley, a fine flower, but too strong a grower. Ianthe, dwarf, of a peculiar laky scarlet, but fear it will be wanting in effect. Of dark reds, Bayard is the best ; Stanstead Rival, very like it ; Emily Lemoine promises to be very good ; and Waltham seedling is very effective. In Pinks, Mrs Upton is far the most effective, though a strong grower ; it beats Maid of Kent, Blue Bell, and Madame du Renne. Christine cannot be spared yet. For carpet-bedding we have a neat seedling Zonale Geranium, very dwarf, with creamy salmon flowers high above the foliage, which we hope will prove a useful thing, as it will work well in with Coleus or Golden Feather ; it fits us between Violas and Alternantheras. Of yellow foliage Geraniums, Crystal Palace Gem is the best ; but for carpeting, Robert Fish is very beautiful,—its yellowish foliage and orange scarlet flowers give it a very striking appearance in combinations. Golden Tricolors of the Mrs Pollock type are of better use for massing ; they are wanting in effect from a distance. The Bronze and Gold are much better, and the more of the gold the better the effect. Flowers of Spring and Mangles' variegated are still the staple in the silver-variegated section. Mont Blanc, with its white flowers, raises great expectations if it prove a

good grower. Lady Plymouth is good for carpeting, giving much the same effect as *Mesembryanthemum variegatum*. Of *Calceolarias*, Raines' King, an old variety, is exceedingly hardy and prolific, and not given to disease like *Aurea floribunda*. Golden Gem, of a deep orange colour, is very dwarf, and a most useful variety.

Violas cornuta Perfection, and *lutea grandiflora* are excellent, and seem to stand drought and heat just as well as any other bedding plant if planted in deep rich soil.

Among foliage-plants for carpet-bedding the small variegated leaved *Abutilon vexillarium* is very neat, its habit spreading, and has a bright golden variegation—the brightest gold in a bed we know, not even excepting Golden Feather. Golden Thyme is very neat for lines, but not so good as the last, and it has a tendency to get greener unless the ground is poor. *Mesembryanthemum cordifolium variegatum*—both the name—makes a beautiful groundwork to show up scarlets or reds, for edging beds and vases. *Kleinia repens* is exceedingly dressy in lines. *Testuca glauca* is also very dressy for parting lines when it does not grow over much; with us, in a dry climate, it is very short, and high in colour. *Sedum glaucum* in the same way as to colour, and will grow if chopped up and sown on the ground in spring. *Coleus Verschaffeltii* is fine for carpeting and working in with whites and yellows. *Iresine Lindenii* is all but discarded. *Alternantheras* are thrown away, except *magnifica* and *amœna*: the former, orange red, spreads and grows robustly; *amœna* is slow growing, but the colour rich; it grows well in heat under glass, which shows that our summers are too cold for it. The old *Cerastium* cannot be discarded yet, though *Antennaria tomentosa* is more dressy for groundwork or edging.

One of the prettiest beds of the season of an oblong shape is planted with Violet Hill Nosegay for centre mass, a band round of Mangles' variegated, followed by a band of *Coleus Verschaffeltii*, and finished with a band of Golden Feather. Another bed has a groundwork of *Mesembryanthemum cordifolium variegatum*, dotted with *Vesuvius* in little round patches, banded with *Alternanthera amœna*, and edged with *Echeveria secunda*, edged with *Sedum glaucum*. Another, with the centre mass of *Coleus*, banded with Golden Feather, banded with *Alternanthera magnifica*, banded with *Echeveria*, and edged with *Sedum*. Charley Carbon makes a glowing bed, banded with variegated *Veronica* and edged with *Sedum*. Golden Gem *Calceolaria* banded by *Viola* Perfection, banded with *Cerastium*, and edged with *Alternanthera*. Christine for a mass, banded with Crimson King, banded with Mangles edged with *Coleus*. Purple King for a mass banded with *Viola lutea*, banded by Crimson King and edged by Mangles.

A long border under a high wall looks gay with first at back a row

of *Sedum fabarium*, broken at equal distances with plants of *Amaranthus salicifolius*; from each of these a festoon of *Festuca glauca* is dropped half-way across the border; inside, the festoons are planted alternately with Lady Plymouth Geranium, and bronze and gold Geraniums, three large plants of *Echeveria metallica* being in the centre of each festoon. The angles of the festoons filled in with *Alternanthera magnifica*, finishing with a straight line of variegated *Mesembryanthemum*, edged with *Echeveria*.

A series of large rectangular beds filled with masses of Waltham Seedling, Cybister, Trentham Rose, Flower of Spring, Lord Palmer-

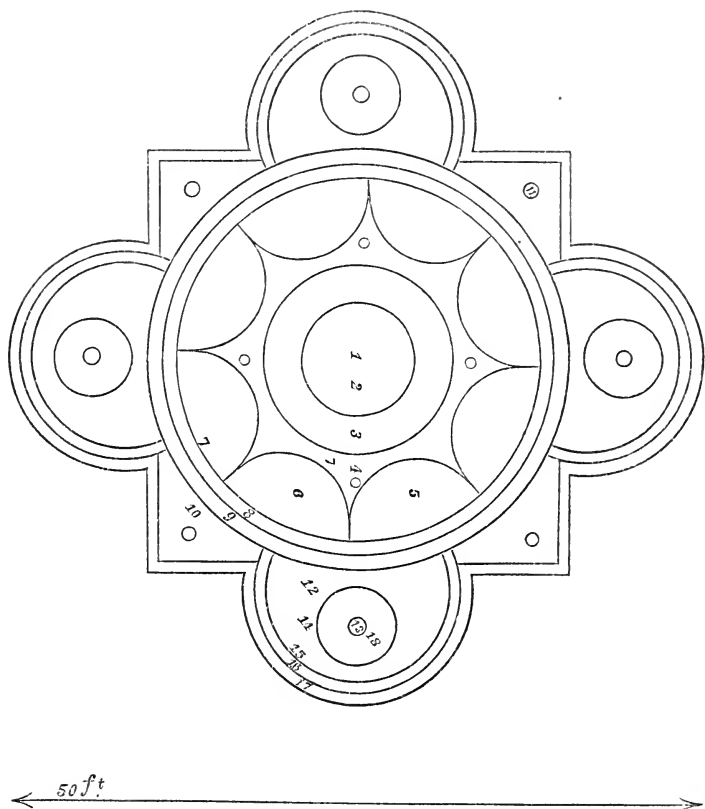


FIG. 15.

ston, all banded with Crystal Palace Gem, and edged with *Lobelia*, alternated with *Dactylis glomerata* var., looks very brilliant. The

same series alternated with round beds, the centres of which contain a tall standard *Acer negundo variegata*, the stems of which are used as stakes for pyramidal plants of *Zonale Pelargoniums*, round which is *Calceolaria Raines' King*, edged with *Centaurea candidissima*.

A very effective bed is *Rival Nosegay Ger.*, banded with *Flower of Spring*, banded with *Coleus*, edged with *Golden Feather*. These, and many more, are planted very simply. It would be difficult to make intelligible the planting of more intricate beds without diagrams, but two large beds planted to match, containing nearly 4000 plants each, are strikingly planted as in the accompanying plan, the beds 50 feet across.

1, vase, 4 feet across; 2, mass of *Bijou Geranium*; 3, band of *Coleus*, 4 feet wide; 4, *Golden Feather*, filling the angles; 5 and 6, *Alternantheras amœna* and *magnifica* alternately; 7 and 7, festoons and line of *Festuca glauca*; 8, ring of *Golden Feather*; 9, ring of *Coleus*; 10, triangles of *Robert Fish Geranium*; 11, single plants of *Echeveria metallica*; 12, *Mes. cord. var.*; 13, single plants of *Centaurea candidissima*; 14, ring of *Festuca*; 15, line all round the bed of *Alternanthera magnifica*; 16, line of *Echeveria secunda glauca*; 17, edging 1 foot wide of *Sedum glaucum*; 18, *Lobelia*.

The weak point in this arrangement is the *Lobelia*, which ought to have been something with dark foliage.



NOTES ON GREENHOUSE SHRUBS.

Bignonia.—A splendid family of climbers and dwarf trees. It is the representative genus of the order *Bignoniaceæ*, which furnishes so considerable a portion of the gorgeous colouring for which the tropical forests, those especially of South America, are famous. The majority of the species of *Bignonia* are tropical, and therefore not adapted to culture in an atmosphere cooler than a warm greenhouse. The difficulty is to get the wood well ripened in a low temperature. If that can be done, the plants will bear a greenhouse temperature in winter without injury, and will flower freely the following summer. One or two species—*B. radicans*, *grandiflora*, and *capreolata*—are hardy enough to grow well in any part of Britain against a wall; but it is only in warm places in the south that their flowers are enjoyed in all their splendour.

The three species just named succeed well, however, in a cool greenhouse—admirably where the climate is not favourable to the development of their flowers in the open air. They make beautiful pillar and rafter ornaments, and splendid covering for walls, where they may have ample space to ramble; for, being great growers, they want plenty of

room. Of *B. radicans* there are two varieties, named minor and major. The former is the brightest coloured, being a fine orange scarlet; the colour of *grandiflora* is orange, and *capreolata* is scarlet,—and they all produce their flowers in summer. Other sorts which succeed well in the greenhouse, being nearly hardy, are *B. capensis* and *B. jasminoides*, both of which are not uncommonly named *Tecoma* instead of *Bignonia*,—a synonym which is founded on a distinction in the fruit of the two so-called genera, and which may be of some importance to botanists, but is of no consequence to gardeners in any practical sense; so that in the garden at least we may dispense with the name *Tecoma*, and reduce by one the chances of confusion and disorder. In the south, where the summer is longer and warmer, the following kinds may be tried in the greenhouse with good prospects of success, if the other conditions of management are good: *B. crucigera*, yellow and scarlet; *B. Tweediana*, yellow; *B. venusta*, orange scarlet; and *B. diversifolia*, purple and white. They are plants of the easiest culture. Strong, vigorous growers, they do not succeed well in pots, but prefer being planted out in good fibrous sandy loam; and they should be thoroughly drained—a point which, if carefully attended to, will conduce very materially to the successful culture of the tropical species in cool houses. They should be allowed to cover the space they are intended to occupy as soon as possible. The flowers are produced on the shoots of the current season from well-ripened buds of last year's formation, after the manner of the Vine. This suggests that in the matter of pruning they should be treated in the same way—not, however, on the short-spur system, but by cutting back last year's shoots in winter or spring to joints that are thoroughly ripened and have prominent buds. They may be propagated by cuttings of the fully-ripened shoots put into bottom-heat in spring, or by short-jointed, partially-ripened shoots in summer in heat under a bell-glass. Some kinds also, perhaps all, may be easily propagated by cuttings of the roots—the strongest roots being cut into short lengths and planted rather thickly in pans in sandy soil, or in sand in a propagating-bed in bottom-heat.

Boronia.—These are handsome dwarf evergreen shrubs from New South Wales. They are nearly all compact free-flowering plants, that form most attractive objects for a long period in summer in the greenhouse. The best and most popular kind, perhaps, is *B. serrulata*, the excellent habit and free-flowering quality of which render it admirably adapted for exhibition purposes, though it is not now so often seen in collections of hard-wooded greenhouse plants at flower-shows as it once was and still deserves to be. A selection of *Boronias* might be made that would flower almost the whole year round, but it would embrace several of the least interesting and pretty ones: the most ornamental

are *B. Drummondii*, *pinnata*, *tetrandra*, *anemonefolia*, and *serrulata*; and of these, were I confined to a selection of two, I would prefer the first and the last. They like good sandy peat, with which a little sandy fibrous loam may be mixed, and thorough drainage. Greenhouse temperature and general conditions suit them well; but in spring, when making growth, they will bear, and be the better for, a temperature intermediate between the greenhouse and the stove. After growth is made, they should be placed in a cooler place to mature. In winter the minimum temperature should not be lower than 45° ; and considerable care in watering during the dull days of winter is requisite. Cuttings of partially-ripened shoots root freely in sandy peat in a cool propagating-house under a bell-glass, which should not be kept too close. They should not be hastened in any way, being rather slow to root; nothing is gained by pushing them with heat. When rooted, there should be no hurry to pot them off; the roots are easily broken when handled very soon after they have been formed. Large shifts ought always to be avoided with these as with nearly all hard-wooded plants of slow growth. Staking, though often practised, is both unnecessary and an evil. Plants so compact naturally require only a little attention to stopping in their first stages of growth annually, to make them all that can be desired by true art.

Bossiaea.—A genus of dwarf Pea flowering shrubs from New Holland chiefly. They are all greenhouse plants, flowering in early summer mainly, though there are several that flower in autumn. They are free-flowering plants for the most part; but this quality depends very much upon management in all cases. If the wood is not thoroughly ripened the previous autumn, not much profusion of bloom may be expected. In order the better to ripen the wood, as soon as the growth has begun to harden about midsummer, the plants should be placed in a position out of doors where they will be freely exposed to light and air. Early in autumn let them be removed indoors, or put in a cold frame, where the lights can be put on to prevent them being saturated at the roots with the rains. Abundant ventilation is necessary at all seasons while the weather is mild, but the temperature should not be allowed to fall below 45° minimum in winter. Peat and loam in nearly equal proportions, and of the best quality, light and fibrous, and rendered porous with a free mixture of gritty sand, form an excellent compost for them. Small shifts only are advisable. Propagate by seeds, which require to be steeped in water for some hours before sowing—they will germinate more quickly after steeping; also by cuttings of half-ripened wood put in sandy compost in a cool propagating-house under a bell-glass. Being rather apt to damp, the glass should be tilted a little on one side after the first two or three days are over.

Pot them off as soon as they are well rooted, in order to prevent matting, and consequent destruction of the roots. The following are some of the best:—

B. cordifolia, a dwarf dense-growing shrub, of pretty good habit, and easily trained by a little attention to pinching during summer into excellent form. The branches are closely crowded with small heart-shaped, sharp-pointed leaves; the flowers are yellow and purplish crimson, in clusters at the extremities of the previous year's laterals, and they open in April, May, and June, but may be retarded or accelerated in opening, according to desire, by management as regards temperature.

B. heterophylla.—A looser-growing kind than the last, but perfectly easy to form into a handsome compact shrub by means of pinching in the growing season. The leaves are narrow egg-shaped, rather broader at the point than the base; the flowers yellow, produced from early summer to late autumn.

B. disticha.—This sort is of somewhat straggling or trailing habit. The leaves are very rigidly arranged in two rows along the branches, with long, rather conspicuous stipules. The flowers are yellow, with a deep-red blotch at the base of the standard or upper petal; they open in March and continue far into summer.

Brachysema.—A small group of greenhouse climbing-shrubs from New Holland, with Pea-flowers, of rather curious shape. So far as I am aware, only two species have any claim to being considered ornamental. They are free-growing plants, that succeed well in good fibrous loam, rather sandy, and are benefited by a little peat of good quality, when it can be got. They should be allowed to extend without summer-pinching, but when flowering is over the branches should be thinned out with the knife, so as to prevent overcrowding. Cuttings strike freely in a cool propagating-house, in very sandy peat and loam, under a bell-glass; they should be partly ripe before being put in. They succeed best when planted out in moderate space for the extension of their roots, and should be well drained, so as to have their growth thoroughly under control in the autumn. They are apt to grow too much when the roots are freely supplied with moisture late in the season, and therefore flower badly.

B. latifolium.—This is a pretty common greenhouse-climber, usually grown in pots, and trained to stakes or a wire-trellis; but which is much better planted out against the back-wall of a greenhouse or a pillar. The flowers are crimson, and appear in spring and early summer.

B. lanceolatum.—This sort has scarlet flowers, shorter than the last, but not less effective. It is scarcely so free a grower, and is therefore better adapted for pot-culture. Flowers in early summer. W. S.

HINTS FOR AMATEURS.—SEPTEMBER.

Now is an excellent time to prepare for fruit-tree planting. If time will admit, large spaces should be dug out to hold a quantity of fresh earth; chopped turf 4 inches thick is very suitable. If the natural loam is strong, the space for the roots should be filled up above the level of the surrounding soil; good drainage is a very important matter. If the ordinary garden soil has to be used, let it be taken from a position where trees have never grown in it before; a little charcoal mixed with it is beneficial. The idea that good fruit cannot be grown without the aid of maiden loam is untenable, but the help of such valuable material is of great advantage. We have an objection to mixing manure with loam for fruit-trees. If the soil is extra poor and light, a little cow-manure may then be serviceable; anything to cause rank growth is not desirable. A foundation of concrete or stones built so that the roots cannot pass downwards may be of great service in time to come—a thing well done at first is true economy. Growths on fruit-trees trained to walls or fences should now be getting hard and brown; growth should now cease, and let all that is not required be taken off. Attend to root-lifting as formerly advised.

We have often seen fine trees lifted and thrown away, because they have grown freely and not set any fruit. A little lifting might have prevented disappointment, and saved valuable trees. Stopping growth of Pyramids and Bush-trees should also have attention. If mildew appears on Peach or any trees, a syringing with water well mixed with sulphur, and a little soft-soap in it (to make the liquid stick), will stop the pest. Birds and wasps will now be busy, and hexagon netting is a sure preventive of both. Though expensive at first, it lasts longer than most other kinds of nets. Let fruit be gathered when dry. Apples and Pears show fitness for gathering by their pips becoming dark in the colour. Have the fruit-room clean and dry; fumigate with sulphur to keep down insects. See that mice have not ingress; they often do much damage in winter, while food is scarce elsewhere.

Cuttings of Currants and Gooseberries may be put in when pruning is done. They are generally selected from the strongest prunings and stuck in the soil by the lower ends till time can be spared to make them. Runners should now be closely cut from Strawberries, both from old and new plantations. Clear away all litter and useless leaves; leave fresh ones entire. Some still cut off the Strawberry-leaves, and allow a fresh growth. The practice is unnecessary, if not mischievous. Old plantations, where it is necessary they should remain, should have a coating of good manure forked over the surface of the roots, but every fibre should remain unmolested. Strong-grow-

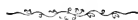
ing plants should have plenty of room left them to develop themselves. Thin out Raspberry-canes which have fruited ; and weakly plants may have the rods reduced to the number required for next season's supply.

The keeping of lawns and flower-beds will now require more labour. Decaying flowers and falling leaves will require frequent attention. Beds which are getting too thick should be judiciously thinned, so that air can circulate and prevent rotting. Top rank-growing Pelargoniums down to a flower-bud, taking away some leaves, and the late bloom will be of a dense character. Ground should not remain cracked, but have the hoe freely used, which will prevent drought from destroying the roots. Give prompt attention to staking of Dahlias, Hollyhocks, and other tall-growing plants. Manure-water at the root will help them much. Let unnecessary shoots be cut from Dahlias, and all decaying flowers cut off. Exhibition flowers should be kept thin, and the plants well supported with guano or other wholesome manure-water. Hedges may now be clipped, laurels and other rank-growing shrubs trimmed into their proper size and shape. Cutting down large shrubs may be left till March or later. Carnations and Picotees may have their rooted layers taken off and potted or planted in a frame ; and Hyacinths and all bulbous roots may be planted for early blooming. Use good loam, with a quantity of well-rotted manure, mixed with a little sand. If the soil is rather dry, water the bulbs after they are planted in the pots ; let them stand till the surface-soil becomes a little dry, then place the bulbs in a dry position, where they can be covered with 6 inches of old tan, fine coal-ashes, leaf-mould, or similar material. They may be looked to occasionally to see that the bulbs do not grow more than from half an inch to an inch before they are removed to a glass structure, where they can grow on slowly, only using the lights to keep off heavy rains and frost. Though Dutch bulbs are hardy, they should not be exposed to frost after they are potted. Bulbs generally are gross feeders, and can take liberal soakings of manure-water while they are growing.

Stage Pelargoniums shaken out of their pots, their roots reduced, and potted into smaller pots, are the better of glass-lights placed over them to keep off heavy rains. Cuttings are easily managed by being placed in the usual way, in sandy soil—kept in the full sun, and damp kept out of the structure ; some place them in the sun in the open ground till they root ; they are then lifted and potted in good loam, mixed with a little sand. Scarlet and Zonale kinds done flowering may be placed in the sun, trimmed back, and prepared to be wintered in suitable quarters, but there is seldom room to spare for large plants, and they often endure rough treatment. Finish pro-

pagating, except Calceolarias, which may remain till October. Chrysanthemums may now be treated as greenhouse plants. Some early ones showing bloom may be placed under glass. Keep frost from those intended to supply the main autumn bloom. Manure-water is of much service, especially if they are pot-bound ; sow more Mignonne. Keep Cinerarias growing with a free circulation of air and plenty of light ; little shading will now be necessary. Primulas to flower early may be removed to their winter quarters, and keep plants for late bloom growing in a healthy atmosphere ; close stagnant air will cause great mischief to Primulas. Lilioms will be greatly benefited by plenty of manure-water. Gladioli, in pots, which have been kept late, should now have plenty of manure-water, and be kept free from decaying flowers. They make a grand show when mixed with other plants in a conservatory. Fuchsias going out of flower should be kept from frost, and may be placed under a stage or similar position. Those blooming will be helped much if they have the water coloured at each watering with guano. All manure-loving plants are helped in this way much better than when they have large and strong applications at longer intervals. Camellias, Cytisus, Coronillas, Acacias, Heaths, Epacrises, Eupatoriums, Azaleas, and all similar winter-flowering plants which have been standing out of doors, may now be prepared for taking them into their winter quarters ; put their drainage right, surface the soil with fresh material, secure any shoots which require staking, wash the pots, and arrange the plants neatly where they are to remain. During this month there is much work to be done in housing plants. Hardy shrubs, &c., to be forced for winter-flowering, should now be placed in full sun, and kept moderately dry at the root, but nothing should be starved into ripening, as its usefulness would be much impaired. China and free-growing Roses for early work may now be kept growing for autumn and winter display.

M. T.



ON CUCUMBER-GROWING.

IN a quiet country village about 16 miles from London may be seen a small garden devoted to Cucumber-growing for market. Having frequently visited this place, we are always forcibly struck with the simple means employed and the results obtained. From a study of these we think some highly practical lessons may be learned. The structures, or houses as they may perhaps be called, are primitive indeed, erected chiefly by the owner, who was a few years ago a gentleman's gardener, but a working gardener, where the charge was limited. For several years past he has devoted himself to Cucumber-

growing for the London trade. His first house for this purpose, if house it may be called, was an ordinary lean-to against a brick wall ; it is about 20 yards long and 10 feet wide. In front of this is another of the same length and width, but with a span-roof, also a little glass under the front plate. These structures are low, but to get headroom a pathway is sunk along the middle, perhaps a yard deeper than the ground-level. On either side of this pathway is a long wooden trough from end to end of the house. These troughs are the most noticeable feature of the whole affair. They are of rough inch boards, from 2 feet 6 inches to 3 feet wide, and 10 inches deep ; the soil used being decayed turf, full of vegetable fibre, mixed with decayed horse-droppings. The troughs are not quite filled at planting out, and as the mass gets filled with roots, a slight top-dressing is from time to time applied of nothing more than road-grit and well-decomposed horse-droppings. The idea is a proper one, that slight dressings, frequently applied, maintain health without over stimulating. The point most noticeable is the small modicum of soil allowed the plants to grow in : they stand about two feet apart ; they are grown with straight stems, about a foot or eighteen inches long ; and trained on temporary trellises, one foot from the glasses, which is evidently not far enough, as both cold and sun affect them a little at that distance. The heat is supplied by flues—that is, 9-inch socket pipes put together with cement do duty as brick-flues. A row of these pipes is carried along on either side under the middle of the troughs. In excavating the path the side earth is left ; on the top of this run these pipe-flues, almost close to the bottom of the troughs in which the plants grow. This flue is the only means of heat ; in severe weather straw mats are put on, and found of great service. The cubical contents of one of these structures is very little. The objects to be heated are all suspended free from the ground ; and limited as the surface is, it can readily be covered up to economise the heat given off inside. The plants which have been in bearing all spring and summer were put out in the early part of winter ; the object being to have plenty when the demand is good. It is curious to note how one thing affects another. This season salmon has been at times moderately cheap, and consequently cucumbers have sold well. The quantity of fruit produced in these small houses is something marvellous. We shrink from a statement lest we should be charged with exaggeration. They are cut three times a-week, and supplied direct to the consumers, only the rough ones are sent to the market for what they will bring. The sort this grower prefers above all others is Sutton's Perfection. Telegraphs and various other esteemed sorts are grown, but no sort is equal with him to Sutton. At our last visit, August 12th, the plants were exceedingly healthy.

The construction of the houses tends to prevent evaporation, though air is given at the top, and the plants do not suffer as they do under a large exposed surface of glass—neither disease, gouty plants, nor insect was to be seen in the place.

We could not help ruminating how the social fabric hangs together: here is a deserving industrious man getting bread for his family in a quiet way, when, lo! he is pretty nigh brought to a stand-still by the price of coals; and there does not appear any signs of relief, while the returns for produce are entirely dependent on the demand and supply.

Various important lessons may be learnt from this Cucumber-grower's practice, but for the present we must leave him. S. X.



NOTES ON HARDY FLOWERS.

Brodiaea.—This is a very pretty and interesting group of hardy bulbs from California. Though perfectly hardy, they are impatient of wet stagnant soil. A rich, deep, well-drained, sandy loam suits them best, and the extremes of light gravelly or clay soils are equally inimical to their wellbeing. In all cases where the natural soil is not proper for these beautiful but somewhat coy bulbs, it should be improved by adding peat and sand to the tenacious class, and loam and peat to the gravelly class, in requisite quantity, or in proportion as in either case it is deficient in body or possesses it in excess. Formerly these *Brodiaeas* were cultivated in pits or frames along with other classes of so-called frame-bulbs, either planted out or in pots, under the impression that they needed protection. Protection they do not require when they are at rest, except it be in the shape of a mound of coal-ashes or tan over the spot the roots occupy; and should the growth appear above ground in spring before the danger of frost is quite over, the necessary protection can be given in the open ground. A warm well-sheltered border is desirable in order to grow them to the best advantage; sunny sheltered nooks about shrubberies and rock-work are very suitable positions for them. They should not be disturbed every year, but be left for two or three years in the same spot if doing well, and need only be lifted for the purpose of dividing them and refreshing the soil. Like all bulbs, though impatient of stagnant moisture, they need very liberal supplies of water in the growing season.

B. coccinea.—This is a gem recently introduced as new, though not really new for cultivation; it has for many years been lost sight of, and we are indebted to Messrs Backhouse of York for its reintroduction. In a mass it forms tufts of grass-like foliage, whence spring the long slender flower-scapes, which rise to the height of about 18 inches, ter-

minating in a numerous umbel of pendant bell-shaped crimson flowers, tipped with yellow and green. It blooms in June and July.

B. congesta.—This sort grows to the height of about 9 inches or 1 foot, bearing a compact umbel of bright blue flowers, which open in July.

B. grandiflora.—This differs from the last sort chiefly in the character of the umbel, which is looser, and in the larger size of the flowers; it is about the same in height, and the flowers open about the same time.

Calochortus.—A splendid genus of Tulip-like bulbs, which have for many years been allowed to remain in oblivion. They were first introduced by Douglas between forty and fifty years ago; but, like many other gems of Liliaceæ, their wants were misunderstood, and they were by-and-by looked upon as desirable things which it was impossible to grow satisfactorily. They were planted in frames or in pots under glass protection, and were lifted and dried every autumn and replanted again on the return of spring. This practice is ruinous to many bulbs; it is so to these. Whether planted in frames or out of doors, they should not be frequently disturbed if they are doing well; there is no reason of a cultural kind for lifting them, except it be for the purpose of dividing the offsets, which do not increase rapidly. It is not the simple act of lifting them that proves injurious, but the practice of storing them away dry and exposing them directly to the action of the air. This weakens them in a greater or less degree according as they are planted timeously or not. No doubt in cold wet soils the roots may suffer harm in winter if left in the open ground; but though lifting is undoubtedly the proper course to take in such circumstances, it will be found better to pot the bulbs immediately after they are lifted, and to store them in a cold frame, or anywhere under cover where they may be kept cool without being exposed to frost, and sufficiently dry without being subjected to the direct influence of the atmosphere. These bulbs prefer a peaty compost, but thrive well in sandy loam if well drained. They make pretty pot-plants for exhibition purposes, and also for greenhouse decoration, but being autumn-flowering subjects chiefly, they are not likely to obtain much favour generally when brought into competition with the more profuse and more easily managed, but not more interesting and beautiful Pelargoniums, which to a large extent monopolise the greenhouse in autumn. As exhibition plants they might do good service at the autumn shows among others in the classes of Alpine and herbaceous plants.

C. elegans.—A small-growing kind, from 6 to 9 inches high. The flowers, three in number on each stem, are large compared with the size of the plant, bearded and fringed with woolly hairs on the inside of the inner petals. Blooms in June and July.

C. Gunnisoni.—This sort is, we believe, recently introduced for the

first time to English gardens by Messrs Backhouse of York. It has very large white flowers 2 to 3 inches across the inner petals, having a purple blotch at the base of each.

C. macrocarpus.—One of the finest of the group, but not, we believe, in cultivation at the present time. It grows to the height of about 18 inches, bearing two large purple flowers on each stem, the petals handsomely bearded at the base. Flowers in August.

C. pulchella, syn. *Cyclobothera pulchella*.—A golden-yellow sort, growing about a foot high. Several flowers are borne on each stem; they are pendant, globular in form, and regularly and sharply fringed on the margin. They appear in August.

C. venustus.—One of the handsomest of the family; the flowers are very large, 2 to 3 inches across, white shading into yellow and crimson at the base of the petals, which are also bearded near the base.

Astragalus vaginatus.—This is a beautiful dwarf *Milk-Vetch*, with a woody root-stock and short branches also woody. The leaves are long, minutely pinnate. The flowers are in large showy racemes and deep purple. They open in June and July. A very handsome rock-plant, and suitable also for the margins of borders and beds. It thrives in any good garden-soil. Propagate by division (not too minute), by cuttings, and by seed.

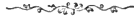
Hibiscus moscheutos.—This is a Canadian swamp-plant of very showy character. It grows about 3 feet high or more in moist damp loam. The flowers are very large, purplish pink, the petals being blotched with crimson at the base. They do not open till very late, except in the warmest parts or against a wall; it is not, therefore, adapted for general cultivation outdoors. It may be grown in pots, however, for greenhouse and conservatory decoration, and would be a very handsome addition to late-blooming plants for this purpose, as it would come in with the earlier Chrysanthemums and Camellias, and be a contrast in form and colour to either of them. It should be grown in large pots, plunged in summer out of doors, and will require to be attended to well with water, moving it indoors on the approach of winter. Increase by cuttings and seed.

Dianthus hybridus Maria Paré.—This is a beautiful pure-white mule-pink, which should be in every garden. The flowers are large and very freely produced, and it is invaluable for either border-decoration or for cut-flowers. It is a very vigorous grower.

Giant Ten-weeks Stock.—This grand strain of Ten-weeks Stock does not appear to be so much appreciated as it deserves to be. When well grown, as every variety of Stock should be to be fully appreciated, this particular kind surpasses far all the other strains of the annual Stock. The colours are bright and telling, and the flowers individually

are twice as large as the ordinary strains, while the tall pyramidal habit, when well grown 2 or 2½ feet high, with the central spike equal to three parts of the height, adapt them for forming bold masses and back lines. They are also well adapted for exhibition, particularly in pots, and altogether deserve to be better known than they appear to be.

W. S.



NEW AND RARE ORCHIDS.

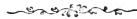
Cypripedium Sedeni.—At the meeting of the Royal Horticultural Society at South Kensington, on the 6th inst., Messrs Veitch & Sons exhibited a fine new hybrid Cypripede raised in their establishment at Chelsea. It is the result of a cross between *C. longifolium* and *C. Schlimii*, and is as nearly as possible intermediate between the two species. It is one of the most interesting hybrids we have had the pleasure of seeing for some time, and will become deservedly popular when distributed. Its foliage is gracefully recurved, of a very bright shining green colour, marked with fine longitudinal lines, and transverse markings of a darker tint. The margins of the leaves are wavy, their entire length being from 12 to 18 inches. The flowers are borne 2 or 3 together, on slender, purple, hairy scapes, about the same length as the foliage, and furnished with bright green bracts at the nodes. The flowers are about 3 inches across from tip to tip of the petals. The sepals are greenish white in colour, veined, and slightly tinged with rose. Petals white, with deep rosy margins, intermediate in shape between the short rounded petals of *C. Schlimii*, and the longer attenuated segments of *C. (Reichenbachii) longifolium*. They are peculiar, being once twisted near the apex. The swollen lip approaches that of *C. longifolium* in form, and is of a deep rosy purple colour without, the interior lobes being of ivory whiteness, and spotted with clear rose. The staminade is greenish white, tinted with rose, and slightly fringed like that of *C. longifolium* along its upper margin. The habit of this grand addition to an already rich and beautiful group is of the most graceful character; the glossy foliage alone would at once recommend it to the notice of the Orchid-fancier, even when not in bloom. Like its parents, it seldom produces more than one fully expanded flower at a time on each scape. The plant exhibited was in robust health, and bore 3 fine spikes. It grows well, treated like its congeners in a moderately warm and genial temperature.

Laelia Jonghiana.—This is a very beautiful and remarkable plant, introduced by M. de Jongh of Brussels, through a young and energetic collector, M. Libon, who died while collecting in the Brazils. It has been flowered by Messrs Veitch & Sons, and from their plant the

beautiful drawing in the Botanical Magazine was prepared. The bulbs are about 2 inches long, produced closely together on a stout creeping rhizome. Each pseudo-bulb bears a thick blunt leaf about 6 inches in length, and dark green in colour. The flowers are borne 1 or 2 together, and are 3 or 4 inches across, produced on a short spike from the young growth, like those of *Lælia præstans*. The sepals and petals are of a clear crimson purple tint, varying to a bright rich amethyst purple. The lip is purple at the base, white at the apex, suffused with rose, the throat being stained with golden yellow, and there are about 7 longitudinal plates down the disc. It grows freely in a shallow pan suspended close to the glass in the *Cattleya* house, and is one of the very finest of modern introductions.

Mesospinidium Vulcanicum.—This is a pretty and free-flowering little plant, in habit of growth resembling *Odontoglossum roseum*, while its flowers at first sight remind one of an *Epidendrum*. It is a native of Eastern Peru, and was found by Dr Spruce in the volcanic mountains of the Upper Amazons, hence its specific name. The vivid rose or rosy purple flowers are borne on a slightly branched spike 12 to 18 inches long, the sepals and petals being nearly an inch long in well-grown specimens. It grows freely in the cool house along with the *Odontoglossums*, and is very effective about March or April. I saw a fine imported plant flowering freely last spring with T. A. Titley, Esq. of Leeds, and it has flowered in several other collections before and since. The plant has been largely imported, and should find its way into the best collections as a useful cool-growing Orchid of easy culture.

F. W. B.



FLORIST FLOWERS.

THE CARNATION (*DIANTHUS CARYOPHYLLUS*).

THE early history of this flower is shrouded in mystery, there being really no authentic record extant whereby we may be enlightened as to when, or by whom, the improved species was first introduced into Britain. While one recorder credits Germany, another Italy, as being its native country, it is likewise chronicled that Gerrard received it from Poland in 1597.

The species from which the present improved varieties—in cultivation—originated, is said to be indigenous to England, where it has been found an inhabitant of rocks and old walls. Whatever be its native country is of minor importance; sufficient that we know that it has been cultivated in Europe from time immemorial, and that its appreciable qualities have not degenerated, but continue yearly to im-

prove. In early times, when the Carnation had comparatively few rivals with attractions to commend them to share the sovereignty of the garden, she was the recognised queen of summer and autumn, her insignia for this exalted rank being the brilliancy and diversity of colour, stately habit of growth, handsome symmetrical form of flower, united to refreshing sweetness of perfume. But of late years the Carnation, along with other hardy plants, has in a measure been in the shady side of popular esteem, and we now join the unanimous voice which recalls her to a place of honour in every garden.

Classification.—There are several distinguishable features which separate the Carnation into groups, by which we have what is designated “Bizarres,” “Flakes,” “Picotees,” and Sells or “Cloves.” Bizarres exhibit in their white petals, irregular stripes, and spots of two different shades of colour. Flakes are distinguished by being composed of two colours—the ground colour, and flakes of rose, scarlet, or purple. Picotees are determined by having a margin or lacing around the petals. Sells or Cloves have only one colour, either white, crimson, scarlet, purple, or other intermediate shades. Each division furnishes endless variety, which are subdivided into the following: scarlet flake, pink flake, yellow flake, &c. The same rule is applied to describe Bizarres and Picotees, but applies to the lacing of the latter. In addition to the foregoing, we have the much-valued “Tree Carnation” in grand array. These are almost exclusively cultivated in pots, and will be treated of separately.

Propagation.—This is effected by layers and pipings when the object is to multiply approved varieties, and by seed for procuring new sorts. *By Layers:* The time to propagate by this means is just when the early flowers have expanded; and the method of procedure is first to have sifted through a fine sieve a mixture composed of river-sand two parts, loam one part, and leaf-mould one part. With this form a little mound around each plant to be operated upon; slope the mound down until it joins the base of the plant, so that the layers conveniently bend and lie to it without disjoining them. When completed, proceed further by taking the shoots intended to form layers, and cutting away the lower leaves. Then insert the knife about half an inch below the third joint, and make an incision into the centre of the joint, directing the knife up the centre of the stem. Cut away the extreme end of the tongue thus formed by the insertion of the knife. The layer is next bent down to the ground and fixed in position by means of a hooked peg, being careful that the incision is left open when fixed. When all the layers on the same plant have been operated upon, finish by putting a covering of the compost over them, and water well with a pot furnished with a finely-perforated rose.

Their subsequent demands are only a watering occasionally, should the weather prove dry.

The afternoon of a hot day is perhaps the best time to perform layering, when the plants are rendered less or more flaccid by the heat of the earlier part of the day, and therefore, more pliable than would be the case in the morning when they are glutted with the sap accumulated overnight. By the end of September the layers ought to be sufficiently rooted to have them severed from the mother plant. Detach them by cutting close to the part where they are laid, retaining as much of the soil as will adhere to the roots, and allot each a pot according to the size of its roots. The soil for this purpose should be two parts rich loam, one of sharp sand, and one of leaf-mould. Plunge the pots in a cold frame in coal-ashes, and supply water enough to saturate the soil in the pots. Keep the sashes entirely up to admit air, but shade gently for the succeeding ten days in strong sunshine.

The commencement of November is quite soon enough to afford the protection of glass, and this only in sharp frost. Continue to supply unlimited ventilation—unless in frost—day and night all through winter, remembering also that every blink of sun is acceptable, causing a quiet flow of sap in circulation, by which the health of the plants is improved. Under this winter treatment there is little to be feared from damping off, or mildew, or any other malady, if the roots have made a proper move before frost sets in.

Insects.—When the Carnation is exposed to a closely-confined atmosphere, it invariably follows that they are attacked by green-fly. The first appearance of these should be the signal to effectually destroy them by a smart application of tobacco-smoke, or by syringing overhead, for a few days together, with a weak infusion of tobacco-water. There are other safe expedients—namely, puffing with Pooley's tobacco-powder, or even dry snuff. Wireworm at the roots is assuredly the most destructive enemy to which this plant is subject, therefore it should be the cultivators' careful look-out first to ascertain that none exist in the compost before using it. Sometimes it is a difficulty to get loam quite clear of wireworm, as whole districts are often infested; but where they must be contended with, an effectual cure may be obtained by spreading the soil into a body of a foot deep some weeks prior to using it. Into every few feet of surface insert a piece of carrot or turnip, and after a few days have transpired, so that the worms have been attracted to the feast, look over the traps and treat those caught to an exceedingly "warm bath." Continue daily to give the creatures your attention until the entertainment thus provided them is wholly forsaken, when it may be concluded that the last has been killed.

General Culture out of Doors.—That the Carnation may grow luxuriantly it must have an aspect sheltered from cold winds, free exposure to sunlight, a rich and perfectly-drained bed, that has been previously enriched with well-rotted cow-manure, and the soil trenched at least 15 inches deep. The bed should contain a good percentage of rich fresh loam taken from old pasture, which has been rotted in a heap, and frequently turned before being mixed with the bed. The ground should be trenched in the autumn, and allowed to lie rough until early the following March, when it ought to be forked and levelled down, and the plants put in in rows, 1 foot apart in the rows, and 14 inches between rows. Should severe frost set in after planting, the plants must be protected by means of hoops extended across the bed, and a covering of mats securely put over them. When the flower-stems have advanced in growth a bit, have them all secured to neatly-dressed stakes, tying them at intervals, as they require, to prevent the wind breaking them; and should the weather prove dry and hot, an occasional watering of weak liquid manure will aid in improving the quality of the flowers. Stir the surface now and then, and keep the ground free of weeds.

As the blossoms approach opening, it will be found that a number of the more double kinds show a tendency to rend their calyx by being too severely distended. To obviate this it is necessary to tie a thread of matting securely around the calyx, which will be quite hid when the flower expands, and the character of the flower preserved.

Propagation by Pippings.—The general fault and reason for failure by this mode is the season being too far advanced before the pippings are put in; and it will be found that propagating by this mode can be turned into a success if the pippings are put into gentle heat at the time when the plant shows a disposition to grow, instead of waiting until the usual time for layering. In preparing the pippings they ought to have the lower leaves cleanly cut away close to the stem, and the shoot cut across below the second or third joint; and without allowing them to flag in any degree, have them inserted into a rather firmly prepared bed of sand and leaf-mould, with a thin covering of sand over the surface. A gentle bottom-heat is essential, and the bed previously watered, but the superfluous water drained off. The house or frame must be kept both close and shaded, and moderately moist, until the pippings are rooted, which will, in all probability, be in three weeks or a month.

By Seed.—Sow the seed in October in well-drained pans, in light porous soil, and place in greenhouse temperature over winter; put the seedlings into small pots when they have reached a size making them capable of being handled; repot, if necessary, in the spring, and plant

out at the latter end of April; and the most of them will flower before September.

Tree Carnations.—These are best multiplied early in the spring, when they root with speed, and with few failures. The plants should be potted without delay, into sizes of from 4 to 6 inches diameter, according to the extension of the ball of soil adhering to them when taken out of the cutting-bed. Allow them generous diet, but the prevailing material in the compost must be fresh fibry loam; second to loam in importance, is a sufficiency of properly reduced cow-dung; drain extra, and pot firmly, without ramming. Repot as soon as the roots net the exterior of the ball, repeating the same again and again, to whatever size of pot the roots require to contain them. Have no thought of limiting the size of pot to induce the plant to flower; flowers will come by-and-by, and the bigger the plant the greater the success both in size of blossoms and in numbers.

SELECTIONS FROM THE BEST COLLECTIONS.

Scarlet Bizarres.—Admiral Curzon (Easom), Coriolanus (May), Dreadnought (Daniels), Duke of Wellington (Bragg), Lord Derby (Heap), Oliver Goldsmith (Turner), Splendid (Martin), William Pitt (Puxley).

Crimson Bizarres.—Black Diamond (Haines), Eccentric Jack (Wood), a magnificent flower of large size, finely marked; Graceless Tom (Wood), Hope (Puxley), pretty; Lord Raglan (Bowers), fine; Phidias (Wood), Rifleman (Wood), in crimson bizzarres one of the most beautifully marked; The Lamplighter, another splendid flower, by the same raiser as Rifleman (Wood).

Pink and Purple Bizarres.—John of Gaunt (May), Masterpiece (Schofield), Purity (Wood), Shakespeare (Puxley).

Purple Flakes.—Dr Foster (Foster), Earl Stamford (Elliott), Florence Nightingale (Sealey), Mayor of Nottingham (Taylor), True Blue (Taylor).

Scarlet Flakes.—Annihilator (Jackson), Christopher Sly (May), Illuminator (Puxley), first-rate; Marshal St Arnaud (Puxley), Mr Battersby (Gibbons), one of the best; William Cowper (Wood), a clear and beautifully-marked flower.

Rose Flakes.—James Merryweather (Wood), Lord Belper (Turner), Mr Martin (Elkington), Nymph (Puxley), Rosabelle (Schofield), Rose of Castille (Headly), Samuel Moreton (Addis).

Tree Carnations.—Foremost amongst the splendid array in this section must be named Souvenir de la Malmaison, and its beautiful varieties. There are both a rose and a pink, besides the much-admired blush-white. The rose is certainly a grand addition, and model companion for the latter. Its shade of colour is very deep rose, a self, with all the qualities of the blush-white. The pink is a striped form, the pink prevailing in the flower. Ascot Giant, white-edged red; Ascot Yellow is edged crimson, fine form; Boule de Feu, scarlet, good old sort; Brilliant, scarlet, striped with crimson; Hermine, white self, fine; Novelty, buff, splashed and streaked scarlet; The Dragon, scarlet, good; White Nun, white self, constant bloomer, fine.

The following little list has been raised by Mr Robertson, gardener, Seacot House, Leith. They have all been awarded first-class certificates, and are the pick out of hundreds grown by that successful grower and raiser of the Carna-

tion:—Annie, mottled; Rosea Queen, Leith Mount Beauty, dark striped; Sea-cot Beauty, dark; Maiden's Blush, Magenta, Magpie, and Crimson King.

Cloves.—Bride (Hodges), pure white, splendid flower, robust grower; Ghost (Turner), a lovely white; Hindoo (Turner), deep crimson, extra; Pioneer (Turner), salmon and scarlet; Purple Prince, extra; Scotch Clove, dark, neat habit; Napoleon III., brilliant scarlet, &c.; Old Crimson, rich maroon-crimson.

A. KERR.



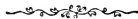
A FEW NOTES ABOUT FRUIT AND FRUIT-TREES.

CHERRY-ORCHARDS we generally see planted and grow best where the land is of a deep loamy soil, resting upon what may be termed a good brick earth. In such soils you may see the trees free of canker and gum-bleeding, to which they are very liable, especially where the sub-soil does not suit them. Gravelly and sour bottoms do not suit them by any means, and this is the kind of soil in which small fruits will grow well, such as Currants, Gooseberries, and Raspberries; indeed we know some orchards growing on such soils that may be said to grow two crops—one of Cherries overhead, another good one of small fruits, quite as close as where there are no trees overhead. In some of these orchards they grow the Gooseberry as from a cluster of suckers. Some of the practical men may smile at this, but it has its advantages, especially in a commercial point of view. Some of the advantages are these: when confined to one stem, they are liable to be broken while moving the ladders about amongst them when gathering the Cherries, and it takes some years to grow a bush to fill the place of the one so removed; but when they are grown as from a bush of suckers they are not so liable to become broken off, and should a branch become unfruitful it is easily removed, and another is close at hand to replace it. Some never cut back the young wood of the Gooseberry, only thin them out. We have seen such bushes from 4 to 5 feet high, and very fully loaded with fruit. Gooseberries in Cherry-orchards are generally gathered in a green state, all cleared off before the Cherries are fit to gather. In many places in the south of England this season, both Cherries and Gooseberries have been a very good crop; last year very deficient.

Orchards.—In the south of England orchards are on the increase, showing they do not seem to fear the importation of foreign fruits, as some would endeavour to make us believe. Of course it requires years of waiting before an orchard of Cherries or Apples, &c. &c., is remunerative, and bush-fruit coming in so much sooner helps to pay at a much earlier period. We know a neighbourhood where the soil is not suited for growing bush-fruit. In these orchards, were they to dig the soil over in winter, letting it remain as thrown from the spade, it

would only be so many hard lumps during summer, almost like so many old brickbats. There the orchards are all in grass, and are mostly of Apple and Plum trees. These do not generally produce such well-grown trees as the freer soil. In many districts in the south of England there is scarcely a set of farm-buildings without its orchard, to both shelter the premises and yield remunerative crops of fruit; and almost all cottages and hamlets are embosomed amongst orchards, and those who are not themselves fruiterers or market-gardeners often sell their crops of fruit by public auction. These sales may embrace all, or nearly all, the orchards within two or three miles square of a district, more or less according to arrangements. Of course the orchards and the nature of their productions are well advertised for a few weeks before the sale, so that intending purchasers may have an opportunity of visiting them to form an opinion of what the crops may be worth. The sale takes place at some convenient central place. Prices vary considerably: in some cases we have wondered how they could pay the purchasers, from the very high price given by them for the crop of fruit,—sometimes £40 an acre for Cherry and Gooseberry orchards, besides all attendant expenses of gathering and sending to market, which may be about a quarter more; but of course few, as a general rule, come up to this figure. This has been obtained this season in a few cases only—while, as was the case last year, few if any reached more than one-half so much; and of course where they are in grass they are proportionably less.

G. D.



THE CHINESE AZALEA.

(Continued from page 375.)

General Treatment.—Although the details of what is considered the best way of propagating the Azalea were given in a former paper, the more general course in private establishments of working into a stock is to purchase young plants, and, of course, where a collection has to be rapidly formed it is the quickest way. Supposing, however, that the grower is in possession of young grafted plants in, say, 5-inch pots in early spring, and the object is to grow them into as large and free-flowering plants as possible before the autumn, they should, in February, be introduced into a temperature of from 55° to 60° , with 10° more with sun by day, placing them near the glass. By careful attention to such points as keeping them steadily moist at the roots, and syringing them freely overhead morning and afternoon, they soon begin to grow freely; and presuming that their pots are well filled with roots, they should be shifted from 5-inch into 7-inch pots.

The chief points for consideration in the operation of shifting are

cleanly-washed or new pots ; the very best turfy peat, broken up with the hand, but not separating any of the fibre from it, and mixing about a fourth of pure pit-sand with it. If it is entirely destitute of sand this will not be too large a proportion of sand to add ; but if the peat is naturally sandy, a fifth, or even a sixth portion of sand may be sufficient. The whole should be thoroughly well mixed, so that there may not be a lump of peat introduced into the pot here and a handful of sand there. The pots should have an inch of clean small crocks in them, and be blinded with the fibry part of the peat, or a very thin layer of sphagnum moss. In potting the plants they should be damp but not wet, and any inert soil on the surface of the balls and the crocks at the bottom should be removed. In fixing them in their new pots they should be three-quarters of an inch below the top of the pot, so that there may be plenty of room for efficient watering. In potting, see that the rough and finer portions of the compost are introduced regularly round the ball—that is, see that a handful of fibre is not put in one place and a handful of the fine in another. Pot firmly, and return the plants into heat again, always keeping them near the glass. Shade them during bright sunshine, and keep them rather close for a time. If the soil was moderately moist—as it should be—they will not require water until the young roots begin to bite the new soil, but must be syringed every morning, and especially in the afternoon, when the house is shut up with sun-heat.

To grow on Azaleas speedily at this stage, they may be treated, as to heat and moisture in the air, very much like a stove-plant all the summer. As soon as they take with their shift give them a thorough soaking of water, and afterwards water them with great care, just keeping the soil moist but not wet, but being sure that they never once get mealy dry, which may kill them altogether, and is certain to check them severely. As the season advances shut them up early in the afternoon, giving them a good syringing, and keeping all parts of the house moist. Any growths that show a tendency to shoot ahead of the rest pinch back, and they will break into growth with several shoots, and so the symmetry of the plant is maintained. While recommending a warm moist stove-heat, air should be regularly given, and the plants should be allowed to become dry in the foliage for a time every day. Syringing with air on the house is one of the very worst practices in all plant or fruit culture, causing as it does the most rapid evaporation and abstraction of heat.

By midsummer the 7-inch pots will be well filled with roots. If all has gone on well they will have clustered themselves in a network at the sides of the pot, and will be seeking their way out at the bottom ; and in this condition they are ready for another shift.

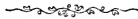
The size of the shift must be regulated by the habit of the variety—some grow much more robustly at both root and top than others. These may be put into well-drained 9-inch pots, using fibry rough soil and always plenty of sand. The less robust in habit will have shift enough by being transferred to an 8-inch pot, when less turfy soil must be used. They should not be put into a pot that they cannot thoroughly fill with roots by autumn. In shifting this time the same rules apply as in the first instance, and the same temperature and general treatment, until the pots are in their turn well filled with roots, and the bloom-buds can be discerned in the tips of the young growths. Then more air, more light, and less moisture in the air will be required, in order to get the wood well consolidated and ripened, so that the plants will yield a crop of bloom the following season. While they are fully exposed to all the air and light possible, be sure that at the same time they are kept moist and cool at the root.

By this stove-plant treatment it is astonishing what large plants can be produced in one season's growth. Of course, grown so rapidly, they do not produce so very dense a crop of bloom as more established plants with less robust growths do. Still, after undergoing a process of gradual but thorough exposure to sun, and consequently thorough ripening, what is wanting numerically is obtained in the size of individual blooms.

It is always found during the season of this rapid growth that much pinching and repinching of shoots is necessary to produce symmetrical and well-furnished plants.

After being perfectly matured in growth, a greenhouse temperature is high enough for wintering them in; the chief points being not to overcrowd the plants, and to keep them steadily and moderately moist at the roots.

Some varieties arrive sooner at the stage when it is desirable to decrease the heat and moisture, and require exposure to more light and air than others; and, if convenient, these should be drafted into another house or pit when they have formed their buds.



HARDY FLOWER GARDENING AT BONNINGTON.

To those who cannot discern beauty or merit apart from a high degree of perfection, a visit to such a place as Bonnington will have little interest.

The proprietor, Sir Charles Ross, not having resided on the estate for a number of years, it is not kept in first-rate order; yet there are few places where more is to be learned by the practical gardener in

search of information. In the houses the only thing worthy of note is the early vinery. Half-a-dozen years ago the Vines in this house were considered worn out, having been in bearing nearly three-quarters of a century; at that time the young wood was no thicker than good Peach-wood, and in the words of a western worthy they were *red Hamburgs*. The roots were as destitute of fibre as walking-sticks; now they annually bear large crops of good fruit, which generally colours well. The soil to within an inch of the surface is a mass of fibres; all this has been brought about by simply renewing the border 3 or 4 feet every year, commencing at the stems and working outward. The soil used was fibrous sandy turf, 2½ inches deep, stripped off and chopped up green, with a very small proportion of cow-manure, and a slight sprinkling of half-inch bones, and used at once. Mr Noble's principle is briefly this—Make a shallow well-drained border of poor sweet soil, and after it has been filled with hardy roots liquid manure may be given *ad libitum*.

But it is in the matter of bedding that Bonnington has most claims to attention; the limited accommodation for wintering half-hardy plants as compared with the ground to be filled, renders the use of hardy plants a necessity, hence the herbaceous system, in which Mr Noble is an enthusiast, occupies a prominent place. The result is, that while in autumn the beds are as gay as at most other places in winter and spring, when many other places are blank, they look not only tidy, but positively beautiful. An entirely hardy ribbon-border is made thus: first line (which may be substituted for box), blue Gentian; second, Golden Arabis; third, *Ajuga reptans*, purple; fourth, variegated *Polyonium*; fifth, Purple *Nepeta*; sixth, White Rocket. In sandy soil the Arabis simply requires to be lifted, divided, and relaid every year or two years. The *Ajuga* should be relaid every year; a shady place brings out its colour best. The flowers should be picked off as they appear; and in dry weather, to preserve the glossy purple of the leaves, it should be occasionally watered. In some places it is difficult to keep the *Polyonium* over the winter. Where the soil is not porous, or the winter is severe, it ought to be wintered in a cold frame. To have *Nepeta* in proportion to the other lines, the young shoots should be taken off with a heel in April, and put in without any preparation where they are to remain, giving a slight watering if the soil is dry; but this, although desirable, is not necessary.

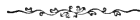
If the Rockets are planted pretty close to the *Nepeta*, they can be cut over as the latter approaches them.

In filling large beds, three or four lines of hardy plants are planted round the edge, and the centre filled with *Geraniums*, *Calceolarias*, &c. In October, when the *Geraniums*, &c., are lifted from the centre, their

places are filled as follows: Yellow Calceolarias, replaced by Dwarf Wallflower, Tom Thumb; White-leaved Geraniums by white variegated Kale, and Scarlets by red variegated Kale. Mr Noble has also been making experiments with the view of laying in the centre of beds to be filled with Geraniums a carpet of dwarf Sedum. By this means the soil will be covered at once, and each Geranium allowed to stand distinct. Among other novelties, we were shown an Aquelegia with yellow variegation, which is under trial, and is expected to be a good thing. Also a dwarf plant, which, if we mistake not, was called *Lamium maculatum aureum*,—leaves of a bright golden yellow, with creamy white centre. It will doubtless prove an acquisition where there are small beds to fill, the outlines of which are often entirely hid by being planted with rank-growing plants.

As a peculiar feature we must not omit to mention the pillar Geraniums, three to seven feet high, which form striking objects in mixed borders, and supply an almost unlimited quantity of cut bloom in winter, kept as they are in a moderate heat. In conclusion, we say from experience, that if the example of energy and skill displayed by Mr Noble were more generally followed, less would be heard of the dullness of flower-gardens in winter.

BRIGHTSPADE.



LOBELIAS FROM CUTTINGS, AND CENTAUREAS FROM SEED.

WHEN Lobelias are used for bedding purposes in large quantities, it is the all but universal practice to propagate by seed, the impression being that this is the easiest and most expeditious plan; otherwise, I suppose it is admitted, that for uniformity of colour and habit, and effectiveness generally, plants from cuttings are the best. I have propagated the Lobelia from seed for years, but I find that seedlings are not adapted for small beds or edgings; be the strain ever so pure, the plants are sure to vary in colour and habit to an extent that seriously interferes with neatness in arrangement. I have therefore been gradually going back to the cutting process, until I have come to use cutting plants for all purposes, even for massing borders hundreds of feet in length; and the improvement is so decided, that I contemplate no other practice in future. As regards time and labour, &c., I am inclined to think that cuttings are the most convenient. Nothing strikes easier than a Lobelia. It is difficult sometimes to get good grass in autumn for cuttings, but be they ever so wiry they never refuse to strike, and before spring they will not fail to make good plants if kept in a cold pit or greenhouse; and they furnish so well, that a few dozens of pots will almost give sufficient cuttings at the

first and second clips to supply a large demand. When struck like Verbenas in spring, scarcely one fails; and as soon as they are rooted, the pots may be placed in a cool pit until such time as they can be planted in cold frames about April, when they will make fine plants before planting-out time. Done in this way, I find less time is occupied than when propagated by seed; for there is first the sowing, then the tedious pricking-off process, next the transplanting from the boxes to the frames, and then the final planting out.

It is yet time enough to propagate the Lobelia, and the best way is to strike the cuttings in pans, and afterwards to pot off into 6-inch pots, in light rich soil, and store the plants away on a greenhouse-shelf or some such place during the winter and spring. They scarcely want more heat before clipping time, and the cuttings are hardy and green when taken off, which goes far towards success in striking them. Last spring the two first clips set us up almost for stock, and the cuttings were almost ready for inserting as soon as detached. Little making is needful, as the shoots strike almost anywhere and anyhow.

CENTAUREA.

With this plant it is the very reverse. Many gardeners are at much pains to secure plants from cuttings, injuring the old plants in the first place in taking them off, and only succeeding, as a rule, in striking a small percentage of them. By far the best way is to sow in February or March, and afterwards pot off into 4 or 5 inch pots. Any number of plants can be raised quickly in this way; the trouble of wintering a stock is avoided, as better plants are secured for bedding, and seedlings make the finest growth. J. S.



BEDDING IN THE LONDON PARKS.

FROM OUR LONDON CORRESPONDENT.

THE display of flowering and foliage plants, or sub-tropicals, is now about at its best; for though the next few weeks may improve some things, others will be going back or losing their freshness, so that now is as good an opportunity as any for making a few notes of the best combinations for reproducing next season. The public taste just now appears to be in favour of small, dense-growing plants, arranged neatly in symmetrical designs, under the technical title of "carpet-beds;" and for this purpose many succulent plants, as Echeverias, Sempervivums, Pachyphytons, Kleinias, Sedums, and Saxifrages, are grown. Other compact-growing flowering and foliage plants, of which Lobelia erinus speciosa, L. pumila grandiflora, three or four varieties of Alternanthera, Coleus, Verschaffeltii, Iresine Herbstii, I. Lindenii, I. acuminata, Santolina incana, Mesembryanthemum cordifolium variegatum, Pyrethrum Golden Feather, Salvia argentea, Stachys lanata, and Cerastium tomentosum, are the best and most generally used. In these carpet-beds and borders, the chief aim is to get

a striking effect by contrasting well-marked colours together, such as white and scarlet, purple and yellow, or white and dark purple, or occasionally dark blue. There is also a tendency this season towards mixing colours in blocks, instead of contrasting them in masses; and we have noticed some harmonious and effective beds so arranged, and edged with two or three rows of dwarf foliage-plants. It is astonishing to notice the thousands of *Echeveria secunda* and *E. californica* that are used for planting round the raised margins of the flower-beds. Some of the beds this season are very much elevated above the general ground-level; and to prevent heavy rains from washing down the margins, a little Roman cement is mixed with the earth of the beds while moist, and the edge is then neatly finished off with a trowel. In order to prevent the colour of the cement showing, it is sprinkled while moist with dry dust or earth. The bedding arrangements most worthy of notice are those in front of the little ivy-covered lodge in Kensington Gardens, the flower-walk leading from the Marble Arch to Hyde Park Corner, the carpet-bedding and subtropicals in Battersea Park, and lastly, but by no means least, the splendid bedding and sub-tropicals in the People's Park (Victoria) at the east end of London.

One of the most notable features in the various London parks this summer has been the effective appearance of the *Yuccas*, nearly all of which have flowered very freely. The effect, grand as it was, would have been considerably heightened if, instead of their being dotted here and there indiscriminately, they were grouped in large clumps or noble masses. Few plants equal *Yuccas* in stately beauty, especially when planted in suitable positions; while for grouping with subtropicals they are invaluable. We will now just take a cursory glance at the bedding most worthy of notice. Entering Hyde Park by the Albert Gate, we find the triangular plot of turf on the left is occupied by Palms, Musas, *Dracenas*, and Cycads. These when placed out were in fine condition, but most of them have suffered by being placed in a position so much exposed to cold cutting winds. Two or three strips of fresh green turf leading from this point to Hyde Park Corner are dotted here and there with beds, some of which are pretty, though none exceed mediocrity. The best are one or two scroll beds, planted with a block of *Cannas* in the centre, and margined with belts of *Cineraria maritima*, Scarlet Geraniums, *Alternanthera amœna*, and a row of *Echeveria glauca*. Another effective bed is planted with light-coloured *Cannas* in the centre, around which are belts of Golden Zonals and *Alternanthera*, the whole being neatly finished off with a border of *Echeveria californica*. One or two beds of light-flowered Fuchsias, mixed on a deep purple ground colour, formed by planting *Iresine* thickly together, are very pretty.

Proceeding from Hyde Park Corner, parallel with Park Lane, we reach the *pièce de résistance*—the flower-walk margined with oblong beds on each side. The two lodges here look very pretty, being completely draped with fresh green festoons of the Virginian Creeper, one of the finest of all deciduous trailers for town gardens. The first set of beds on the right are edged with purple *Iresine Lindenii* and *Pyrethrum Golden Feather*, and have a very distinct and telling effect. *Pelargonium Duchess of Sutherland*, in the first bed, is a good rosy scarlet; the next bed being filled in with *Pelargonium Queen of Queens* and *Verbena venosa* mixed. This combination of a silvery leaf with scarlet and purple flowers is a good one, the effect being considerably heightened by the above edging. The third bed is filled in with *Lucius*, a free-flowering Zonal; the fourth being composed of *Mrs Pollock* and *Viola Blue Perfection* mixed. This last mixture is not a bad one, though not so striking as the *Queen of Queens* or *Manglesii* grouped with *Verbena venosa*. *Calceolarias* appear to be

a failure, generally, this season, owing to the disease to which they are subject having made its appearance. A bed or two of *C. amplexicaulis*, however, does not seem to be affected, the foliage being fresh, and the plants are blooming well. Christine still holds a place among the pink-flowered bedding *Pelargoniums*, while *Amaranthe* is darker in tone and bears a larger truss. The corresponding beds on the left are edged with crimson *Alternanthera* and blue *Lobelia* and *Poa trivialis* var., in alternate clumps, the whole being margined with the glaucous-leaved *Echeveria secunda*. These beds are filled in similarly to those on the right. The third bed is planted with *Coleus*, and has a belt of the golden-leaved *Crystal Palace Gem* in addition to the above edging.

Stella variegata, mixed with the best of all *Verbenas*—*Purple King*—is a telling arrangement; and *Heliotrope Jean d'Amour* is a dwarf-growing free-flowering variety, bearing large, deep purple, heavily perfumed trusses. The second series of beds on the left are margined with rows of crimson *Alternanthera*, golden *Mesembryanthemum*, edged with *Echeveria secunda*. The corresponding series on the right are edged with a neat, rosy, purple-flowered *Lantana*, bordered with a belt of the silvery-leaved *Veronica incana*. One or two beds here are very effective, especially one on the left planted with *Coleus*, surrounded by a row of silvery-foliaged *Centaurea*, in addition to the above edging. *Pelargonium Louis Roselle* is a bright, free-flowering orange-scarlet, and makes a fine distinct bed. *Centaurea ragusina*, mixed with the fine old *Verbena venosa*, is a telling bed, fringed with *Alternanthera* and deep rose-coloured *Verbena*. The best bed, however, that we have seen this season in this style, is *Verbena venosa*, mixed plant for plant with the rosy-flowered *Pelargonium Manglesii*, edged with rows of *Iresine Lindenii* (dark purple), *Alternanthera amœna* (carmine), and *Mesembryanthemum cordifolium* var. (soft yellow).

One of the prettiest little bits of bedding near London is that in front of Mr Chamberlain's cottage, in Kensington Gardens. Here we find bright colours agreeably softened down with a judicious mixture of foliage-plants—as *Yuccas*, *Grevilleas*, *Dracœnas*, and *Palms*. The central bed is a circle of crimson *Alternanthera*, in the centre of which is a cross formed of *Lobelia pumila grandiflora*, dense grower and one mass of blue. This is edged with a broad belt of *Pyrethrum Golden Feather*, and a narrower edging of *Sempervivum californicum*. The semicircular border is also very pretty; and the interest taken in this clever bit of colouring may be inferred from the fact, that the grass in the park for a yard or two from the fence is completely worn away by the feet of visitors, who find their way here all the day long to look at this cheerful little garden.

The pretty little *Santolina incana* is a nice dwarf silvery plant, likely to be of great use for edgings, or for carpeting the small compartments of geometrical borders. The bedding in the Green Park is not above the average, so we will cross over the Thames and visit Battersea Park, the home of subtropical gardening in this country. Every visitor to the metropolis should see Battersea, which is one of the most interesting of all London gardens at this season of the year. Here one may find choice Ferns, such as *Neottopteris indus*, *Dicksonia antarctica*, and many others, not only existing but actually growing outside in sheltered glades and warm recesses, accompanied by choice *Palms*, *Cycads*, and other effective foliage and flowering plants in quantity. The *Yuccas* here bear great spikes of their sweet wax-like flowers, and have a telling effect among other vegetation. Splendid specimens of *Cycas revoluta*, *Blue Gum Trees*, *Erythrina* or “Coral Plant,” and *Seafortia elegans*, are isolated on the fresh green turf with good effect. The margins of the lakes are also fringed with tall reeds and noble grasses and other water-plants, which give a strikingly natural ap-

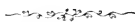
pearance to the whole place. Pure white Water-lilies nestle peacefully on the quiet water of the glassy pool, while tall Bulrushes tower above them as freely as if in their native swamps. In one of the borders we noticed *Eccremocarpus scaber* growing and flowering very freely. This is a plant nearly allied to the Bignonias—of trailing habit and requiring some slight support. It bears its bright orange-scarlet flowers in profusion all through the summer, and is easily propagated from seeds, which are freely produced in warm sunny positions. *Cannas* do better here than anywhere else we have seen, and are in many cases allowed to remain out in the beds all the winter months, the only protection they require being a thorough mulching of stable-manure or leaves. Not the least interesting feature in the garden are the mounds carpeted with dwarf, dense-growing Sedums, Saxifrages, and other succulents, and dotted here and there with finer specimens of the larger-growing kinds—such as *Pachyphyton bracteosum*, *P. roseum*, *Rocheas*, *Aloes*, *Cacti*, and *Bromeliads*.

Passing through the densely-populated east end, we reach Victoria or the People's Park, as it is more generally called. The bedding arrangements here are carried out in fine style, and perhaps the display of bright glowing colours is better appreciated here than in all the other parks. Willows grow well by the margins of the ornamental water, drooping in some places down to the very edge; but, nevertheless, the water has a wild and barren appearance, being totally devoid of aquatics, and many of the banks are also quite destitute of shrubs. The first group of beds we come to has a double-scroll bed as a centre-piece, and this is very neatly carpeted with crimson *Alternanthera* fringed with a double row of *Echeveria secunda*, and dotted here and there with escutcheons of golden *Mesembryanthemum* and *Pyrethrum*, in the centre of which large *Echeverias* and *Sempervivums* are planted with good effect. A very pretty circular bed is planted with *Coleus* in the centre, surrounded by *Cloth-of-Gold*, *Lobelia pumila grandiflora*, and margined with *Echeveria secunda*. Another larger bed has *Mrs Pollock* in the centre, surrounded by belts of *Coleus Verschaffeltii*, *Golden Pyrethrum*, and crimson-foliaged *Alternanthera*,—a by no means unattractive combination. Here, as well as in Hyde Park, there is a taste for mixed beds, one of the prettiest in this group being composed of *Bijou Pelargonium* and *Viola Perfection*, edged with *Iresine Lindenii* and *Golden Feather*. This last edging of purple and yellow is very telling, and always looks well. A triangular bed of dwarf orange-flowered *Tropæolum* and blue *Viola* mixed, margined with crimson *Alternanthera* and *Golden Thyme*, is a well-contrasted arrangement.

The semicircular series of beds in the centre of the Park are very effective, and form the *pièce de résistance*, in company with the subtropical walk and ribbon-borders. An oblong bed filled with *Centaurea ragusina* and *Verbena venosa*, edged with *Iresine Lindenii* and the soft yellow variegated *Mesembryanthemum*, is very fine. The Trefoil, or central bed of the group, is also well planted; the two lateral divisions being planted with *Bijou*, and the central one with *Mrs Pollock*, margined with belts of *Coleus*, *Golden Pyrethrum*, *Crimson Alternanthera*, and a double row of *Echeveria secunda*. A round bed or two planted with *White-leaved Zonal* and *Blue Viola* mixed, edged with *Alternanthera amœna*, *Golden Thyme*, and *Echeverias*, is very effective. An oblong of *Scarlet Zonal* margined with a broad band of *Purple King Verbena*, and edged with the dwarf *Golden Feather*, is also a very striking arrangement. *Calceolarias* here, as elsewhere, look miserable, and for the future it would be as well to exclude so uncertain a plant from the flower-garden altogether, as its failure spoils any intended effect for the whole season. Further on, towards the pri-

vate houses and frame-ground, we find two very striking circular ribbon-borders—one being cut into triangles and lozenge-shaped compartments by belts of Pelargoniums, and the other planted in semicircles of white, pink, and scarlet-flowered Zonals, having triangularly-shaped compartments in front. The first has the compartments filled in with Coleus and Alternanthera, while in the latter they are filled with Lobelia pumila or *L. erinus speciosa* and Bronze Zonals alternately. The margins of these borders are distinct and worth notice, the one being edged with *Mesembryanthemum cordifolium* var. and *Lobelia pumila grandiflora*, and the others with three belts formed respectively of *Iresine Lindenii*, *Pyrethrum Golden Feather*, and *Cerastium tomentosum*. Passing along the subtropical walk, we meet with some distinct beds of foliage-plants. *Acacia lophantha*—one of the finest and freshest window-plants we have—here looks well in a bed, and a mass of the bright-looking and very variegated Maize edged with deep purple *Iresine Lindenii* is attractive. A rockery carpeted and planted with succulents, similar to the one already described at Battersea, is an interesting feature in this department; while a bed of large-leaved *Wigandias* edged with the crimson Chilian Beet and variegated Coltsfoot is an uncommon though effective bit of colour-planting. Belts of *Cannas* and *Ficus* fringe the shrubberies, and masses of *Yucca recurvata* are flowering freely on the sloping bank, backed by dark-coloured evergreens,—just the position to show off their tall masses of wax-like flowers to advantage. A nice specimen of *Yucca filamentosa* is also producing a fine spike of flowers. A round bed of the new *Amaranthus salicifolius* is just showing colour, and promises to be more effective later in the season. It evidently likes a moist shady position, as on dry, hot, and sandy soils it loses its lower foliage and gets leggy. Fine masses and mixed beds of *Cannas* and other subtropicals are arranged on either side the winding walk, from which nice views are obtained of the margins of the lake and the drooping willows which fringe its banks. A mass of *Dracæna ferrea* makes a distinct bed; and a round bed with a star-shaped mass of Coleus in the centre, the intervening spaces between the ray being filled with Golden *Pyrethrum*, is very pretty, the whole being neatly margined with a belt of Crimson *Alternanthera* and a double row of *Echeveria secunda*. Musas, Palms, and Yuccas are dotted here and there on the turf among the beds, and help to relieve the monotony of bright colours on every side. Next year we may look for an overwhelming preponderance of “carpet-beds,” which are all pretty well in their way, but masses of bright colour should be relieved by fresh green foliage, or the eye soon tires of glaring effects. Give us bright glowing colour, but let us also have cool turf, fine trees, and noble foliage-plants, in order to balance and harmonise the whole into one bright and beautiful picture, or much of the intended effect is lost on intelligent observers.

LONDON, August 12, 1873.



FLOWERING - SHRUBS ON WALLS.

AMONG the many subjects which have been discussed in your valuable magazine, this is one which I think has not received due attention. I am sure there is no branch of gardening worse understood, or if it really is understood, not treated accordingly. I have worked in and visited many gardens, and have never seen flowering-shrubs on walls

attaining to anything like perfection. The pruning they generally receive is done with the hedge-shears, clipping them close in to keep the wall tidy. This is what one might term a rough style of pruning on the spur system, of course allowing the terminal shoots to grow on and cover the wall. On these shoots I have seen a few flowers, but very rarely on any other part of the plant. This plainly shows that it is on the previous year's growth that the flowers are produced; thus it is obvious that spur-pruning is not the style. Of course that principle will suit some plants, such as Jasmine, Honeysuckle, and Clematis, which bear flowers on the same year's growth, but with shrubs such as Escallonia, Ceanothus, and Deutzia, I would say, nail in a fair amount of young wood each year and cut out the old, which would insure a return in the shape of flowers, for which purpose the shrubs were planted. In fact one will generally find them filling the place of evergreen shrubs. If flowering-shrubs are wanted, let them be managed so as to produce flowers; if not, Ivy will cover a wall to more purpose, and besides can be kept tidy with less trouble.

In concluding, I would say this is not to instruct my readers how to manage these shrubs, but simply to bring the subject before your notice; and I would pray some one who has had more practice to give us a few hints as to their management, which I am sure would gratify the readers of the 'Gardener.'

D. K.

TEMPERATURE OF FORCING-HOUSES.

WE gardeners are very apt to make the most of a theory with which we may happen to have fallen in love: circumstances and events, which would have either been passed unnoticed, or otherwise been set down to another cause, are brought to the support of an espoused theory. "A. R. C.'s" method of reasoning on his Muscats setting, may be classed under this head. It is a fact, which I have proved entirely to my own satisfaction, that Muscats will set as freely subjected to a minimum temperature of 75° , as they will in any other down to 45° ; only, in each and every degree that may be chosen, artificial help to impregnation *must* be given. Muscat—Cannon Hall being the worst setter, and Mrs Pince the best—Buckland Sweetwater, Golden Champion, and Black Morocco, are all liable to set badly, on account of the cap—if I may be permitted so to call it—which envelops the anthers and stigma, unless some means are taken to dislodge it. This "A. R. C." accomplished by syringing. I attain the same end by shaking the Vines gently, and, in stubborn cases, going over the bunches individually and removing them by hand.

There seems to be a very wide meaning attached to Mr Simpson's re-

marks on the desirability of a lower night temperature for forcing; for my part, I am unable to see how it would be possible in early forcing—say, starting at Christmas, the Grapes to be *ripe* by the beginning of June—to have the fruit ripe in time, unless an average very near that recommended by Mr W. Thomson and other authorities on the Grape Vine is kept up. Nor do I think Mr Simpson's remarks tend to convey an impression to the contrary. The fact is, unless artificial heat is applied to keep the temperature to about the average recognised as the most suitable by practical men, more especially from the time the bunches have well "shown" onwards to the ripening process, the Vines will come pretty much to a standstill. Mr Simpson's theory of rest at night will recommend itself to every one as very natural; but I fear, if Grapes are to be had ripe, as now, at a certain time—I mean, early-forced Grapes—we must "stick" to our present temperatures, though, in very cold weather, letting the temperature drop a little rather than fire too severely. I consider it a very good plan to have a bed of fermenting material on the borders of early-forced houses. It goes far to create humidity in the atmosphere, whilst it, at the same time, obviates the necessity of so much firing. We can doubtless dispense very much with fire-heat with late-started houses, as the length of the day, the shortness of the night, the increase of the outside temperature, and the increasing powerfulness of the sun's rays, all go to keep up the required average temperature. In our late vinery scarcely any fire-heat has been given, nor will there be any more till the crop begins to ripen, when firing will be carried on as the state of the weather may call for. It may be well to warn those who have been induced to dispense pretty much with fire-heat, to be careful in the application of moisture. Even now, I am careful to have the house thoroughly dry every day, and in the dull weather damping is very cautiously gone about. Mildew is very easily produced, and not quite so easily got rid of.

I cannot agree with Mr Simpson, that, as he wrote in a contemporary a few weeks back, the main cause of failure in Grape-growing is caused by too high temperatures. I believe the cause is to be found very generally in over-cropping the Vines, and over-manuring the border, in the shape of manure-water, to induce the Vines to finish the crop. It is notorious that very few have the courage and the common-sense to crop young Vines lightly; and these few, instead of making an appearance, according to the number of vineries they may have at command to "finish" up, one after another, will hold on the even yearly tenor of their way, the Vines meanwhile improving year by year. I see no prospect of lowering our "firing" bills to any great extent through lowering the "forcing" temperatures, for what may

be saved in fuel will be lost in earliness—and in many cases this is of more consequence than the coal or coke bill: for my part, I would not care to have a lower minimum temperature than 60° to 65° for early forcing, nor do I think it necessary, in order to insure the setting of the crop, to raise the temperature any higher. I cut Black Hamburgs in twenty-four weeks from the time the house was shut up, and 65° was rarely exceeded until colouring commenced, nor was the heat many times lower than 60° , though no attempt was made to keep to a fixed temperature. From the time colouring commenced, from 68° to 73° was the minimum range, with air continually “on”—the Grapes were sweet though not ripe. We made the most of sun-heat all through, running up to a figure in the day-time which would alarm a good many. Coke is more than four times the price it was last year at this time. I, for one, wish we could get things to succeed in a lower temperature, but doubt it very much. R. P. B.



COLSTON BASSET MELON.

As they say in sporting circles, this is “a real good thing.” I do not know that I have ever tasted a better Melon. The fruit is of good size and appearance, sometimes large, a good keeper, and the flavour first-rate. When fully ripe there is a juiciness and sugary crispness about the flavour that very few Melons possess in any degree. It is a somewhat shy bearer, and not an early Melon, but the plant is very vigorous, and will bear a second and third crop much better than some. It is a variety that should be grown by every one for the general crop. “Little Heath” we have tried, and find it comes in pretty early, but it cannot bear comparison with the Colston Basset in any other respect; in fact it is only a second-rate variety in our estimation.

J. SIMPSON.



THE CHILWELL STRAIN OF PELARGONIUMS.

MR J. R. PEARSON of the Chilwell Nurseries, Nottingham, has made his name famous through his indefatigable and most successful efforts in producing so many new and improved varieties of Bedding Pelargoniums for summer flower-garden decoration, and for pot-culture. What a host of fine ones we are indebted to him for!—Milton, Shakespeare, William Thomson, Duke of Devonshire and his gardener Thomas Speed, Major Clarke, Lady Belper, Chilwell Beauty, Alfred, and Bayard, all eminent names and eminent varieties, as well as many others of more or less merit, yet none at all equalling Amaranth in the

pink, and Corsair in the scarlet section. There does not exist, and it is impossible to conceive, a more beautifully chaste colour than that of Amaranth. In its profusion of massive nosegay trusses it far surpasses all other pink varieties. It is of robust growth, and well adapted for the centres of beds or lines in ribbon-borders, where it harmonises with any colour, no matter what hue : viewed closely or at a distance the effect is magnificent. Pot-plants are alike effective in the greenhouse or conservatory. Some now blooming in 7-inch pots are bearing trusses sixteen inches in circumference. The value of Corsair may be estimated as decidedly excelling that excellent variety Vesuvius, which it very much resembles in colour, habit, &c., but there is a richness about the fine scarlet flowers of Corsair which does not exist in Vesuvius. Individually the bloom is larger, and the whole truss of better substance. Both Corsair and Amaranth are comparatively new, being sent out by Mr Pearson in the spring of 1872, and those of your readers who have not got them should procure them at once, when they will be in possession of the two finest-blooming Geraniums extant.

J. M.



MUNRO'S LITTLE HEATH MELON.

HAVING grown this Melon extensively this season, I can bear testimony to its being a variety with hardy constitution. It sets its fruit very freely under adverse circumstances—such as during dull damp weather—and the plants have not shown the slightest tendency to disease. It grows to a large size, producing a solid heavy fruit, and cannot fail to be a most excellent variety for market purposes ; and in the case of those who have only ordinary frames to grow Melons in it is invaluable. It is impossible to speak correctly of its flavour, for we have not had ten days' sun all summer.

D. T.

P.S.—The above was in type before Mr Simpson's opinion reached us.



NOTES FROM NEW ZEALAND.

[Being frequently asked about the best colonies to which gardeners should emigrate, we publish the following :]

THE Rev. A. J. Campbell (late of Melrose) gives the following, in the 'Geelong News,' as his impression of Otago, on a recent visit there. "The people of Dunedin are full of activity, very comfortable, and in all respects, I should say, prosperous. They are busy in all kinds of industries. Wages are higher than in Victoria—7s. for labour work, 10s. and 12s. for skilled labour : other things, however, are also higher. But the workman has almost constant employment, and the eight-hours system has been in operation since the foundation of the

colony. As most of the tradesmen seem to be owners of their own cottages, you will see at once how well off they ought to be. Add to these the advantages of a bracing climate and a well-ordered administration of the law, you will be inclined to think that Otago is, what it claims to be, the poor man's paradise. I haven't seen a beggar on the streets, nor a drunken man, although I learn that drunkenness, with its bitter home-miseries, is not unknown. There is much less of the pride of life, much less of the show and ostentation of wealth, than you might expect in the capital of the province. There are persons who have risen to position and wealth, but they don't affect that style and luxury which is corrupting the upper stratum of Melbourne society. Hard work and happy homes seem to be the two conditions of life; and there still survives among them the recollection of the early struggles of settlement, which is a source of much good feeling and helpfulness.

After emerging from the mountain-ranges in Waikouaita, we passed for 30 miles through a rich belt of country of various breadths, and well planted with farm-steadings; here again there were abundant proofs of a thriving and well-to-do community. Many of the buildings are of stone: when of wood, they are invariably painted white, and tidily roofed with corrugated iron. The feeling one had in looking at them was—"these people mean to make their homes there;" and one could not wonder, for on that golden summer day the fields were alive with men and horses, busily gathering the kindly fruits of a rich harvest into their barns and stackyards. I found in the dreary pass of Pigroot four persons, besides the keeper of the inn: one of them, whilst engaged in work, had got his leg broken, and as he could not be transported to Dunedin hospital, his friends built a house for him, and helped him to a few cows and sheep—a nobler way of disposing of him, I think, than shoving him over on public charity: the other three were roadmen, who for seven years had been living and working in that solitude. They were Scotsmen, and two of them, I was glad to find, were making regular remittances to a widowed mother and a widowed sister; each of them had sent home in ten years £150. I found almost the whole interior of the country parcelled out into large sheep-stations; and as the administration of the land is now taken out of the political sphere, and placed in the hands of a permanent board, that will shut the door against land-jobbing to a large extent. The Government are parting with the public estate very leisurely. What they do sell is put up to auction at a pound per acre, with the exception of those upland pastures, 1200 feet or more above the level of the sea, which are now to be set up at 10s.

The Autumn Show of the Royal Horticultural Society of Otago was held in Dunedin on the 13th March. The exhibits were on the whole good, though not so numerous as those of last season. The attendance was not up to the average, but this may be accounted for by the strange absence of any effort to procure publicity. The exhibits of fruit were very fine, the Peaches being unusually good; Apples and Pears were also large and sound. Some Peaches grown by Mr Fulton, and a number of Pears, Apples, Plums, Peaches, Strawberries, Blackberries, Currants, Cucumbers, exhibited by Mr M'Ardle, occupied a prominent place among the fruit. A pyramid, composed of various fruits, grown and arranged by Mr James Gebbie, was well worthy of inspection. The vegetables shown were very fair, and there were some fine Cabbages, Carrots, and Turnips among them. Although the season has been rather unfavourable for the flowers, there were some good ones produced. A fine collection of Coniferae was exhibited. Some pretty foliage-plants, tricolor Geraniums, were shown by Mr C. Reid, and a splendid collection of Gladioli by Law, Somner, & Co.

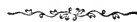
Acclimatisation.—One hundred skylarks were liberated in one lot, in Fokomairio, on the 9th of April, and there is every reason to think they will succeed. The pheasant has for years given the sportsmen in Auckland employment during the shooting season. Partridges seem to thrive well in Otago. In a paddock in the Palmerston district, no less than three or four coveys, or about 40 birds, were recently observed. A few days before the last despatches, a lad rode a horse into the Maitai to drink, when it put its foot upon a magnificent trout, 10 lb. weight.

Coal.—A correspondent of a paper who had taken a drive out to the country districts to see how things were looking, says of the district of Lovel's Flat,—“I saw for the first time the immense deposits of coal in this locality cropping out of the ground. Some seams are nearly 20 feet thick, 1 or 2 feet of stripping only being required to develop them. It is a regular coal-quarry, where a man with pick and shovel can fill a dray in no time without disappearing underground. Time prevented me from visiting the Clutha coal-field. A pit was being sunk on Mr Henderson, M.P.C.'s property, which at the depth of 30 feet indicated coal, and, if discovered, will no doubt prove of superior quality. Here also strong indication of iron deposits could be observed, a very superior specimen of hematite being discovered while digging. On my return, I received a very good specimen of coal from Mr Douglas, Waiholā, which is said to have been found towards the sea.”

Kauri gum oil.—This new oil is beginning to attract the attention of painters in New Zealand. It is a product obtained by the distillation of kauri gum and coal. Its preservative properties are spoken of in the highest terms of praise, and it is said to be far superior to tar for preserving wood when exposed to damp. It gives a beautiful soft brown colour to any article painted with it. If the high opinion now formed of it should be borne out in actual and lengthened tests, there cannot be a doubt but the successful manufacturing of this oil will add somewhat to the price of the well-known kauri gum.

Lime.—The ‘North Otago Times’ reports that the captain of one of the harbour steamers, having a small piece of Damaru stone aboard, put it into the furnace, where it was shortly reduced to a fine powder—the purest lime. He used this for whitewashing the funnels, which it rendered dazingly white, and he found that the coating stood better than any he had ever used before, without peeling, it being almost impossible to remove it.

Iron-sand.—The report of Messrs Gledhill & Hamerton sets all doubt at rest as to the unlimited abundance of iron-sand at Taranaki. On arriving at the east bank of the Henni river, they proceeded to dig at several places, with the following results: In the space situated between the sandhills and high-water mark they found solid iron-sand to the depth of 4 feet, and no apparent change at that depth. Previous experiments afford grounds for the belief that the deposit of iron-sand varies from 15 to 30 feet in depth.

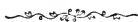


REVIEW.

THE ART OF BOTANICAL DRAWING. By F. W. Burbridge. London, Windsor & Newton, 38 Rathbone Place.

Mr Burbridge is well known to the readers of most of the gardening periodicals of the day as a very accurate and scientific botanical draughtsman. Combined with a natural genius for drawing, he has a thorough practical knowledge

of plants, and he has carefully and skilfully cultivated the art of plant-sketching on the most correct principles. It need therefore scarcely be said that he is well qualified to instruct in making scientific drawings of plants. He has also the gift of a clear and succinct way of conveying information with his pen, and the result of his present effort is, to our mind, a most useful and much-needed handbook on botanical drawing. The rules which he has laid down for guiding the student are most understandable, and they are, besides, illustrated with twenty engravings designed by himself. The work is very comprehensive, though comparatively brief. Its instructions embrace : materials for drawing ; how to draw foliage, regular flowers, and irregular ones ; fruits and seeds, as well as plants in their entirety. There are also instructions and illustrations of group-drawing for shading and colouring, picturesque sketches, concluding with numerous hints and suggestions. It is a wonder that botanical drawing is not more frequently attempted and acquired by young gardeners and botanists than it really is. It is to be feared that the idea prevails that unless one is born a draughtsman it cannot be acquired. Doubtless, as in every other art or performance whatever, some have greater natural aptitude for drawing than others. Still it is a great mistake to suppose that a considerable degree of proficiency in correctly representing plants on paper is not within the reach of very many. It only requires to be begun in youth, and carefully and perseveringly pursued. And once begun it is a most alluring occupation, and one which we would recommend to young gardeners as well worthy their attention. And we know of no better instructing companion in the way of a book on the subject than this of Mr Burbridge. It is so very cheap that it is within the reach of all ; and we would strongly recommend it to the attention of our younger brethren, feeling sure that if they purchase it and be guided by it, with a little care and perseverance, they will astonish themselves by the representations of plants which they will be enabled to place on paper with their pencil. We should much like to have quoted from the work to show how well it instructs, but as it is procurable for a mere trifle, we prefer referring all who are interested in the subject to the work itself, and if they follow its instructions we are certain they will benefit by it.



Calendar.

KITCHEN-GARDEN.

PREPARATION should be made as early as possible to get the crops planted which are to come into use during next spring and summer. This applies to Cabbage, Lettuce, Endive, and Cauliflower, on ridges or sloping borders, under handlights or plant-protectors (most useful structures). Trenching the ground, whether it is heavy or light, is an important matter ; and though it is not desirable to manure the land heavily, none of the above do well in poor soil. If it is necessary to give manure, a good coating placed between the top and bottom spit will answer well : the roots will not get to it to make the plants rank, so that they will

not stand severe weather ; but when growth becomes active in spring, they will get the benefit of the manure then. Cabbage may be planted a foot each way where ground is scarce, and every alternate one can be lifted and transplanted in spring, or, if not required for that purpose, they can be used as greens, leaving a full crop on the ground. Lettuce can be planted 6 inches apart or less, and they can be blanched early by the use of flower-pots, boxes, &c., and come in useful, or be transplanted to rich ground in March. We have often sown and planted them between Cabbage, and the latter seemed to give protection ;

and the Lettuce was all used up before the Cabbage required the space. When transplanting from the seed-rows, it is necessary to have good sturdy plants. When they have been previously pricked out, they are comparatively easily managed. Thin Lettuce so that a full crop will be left on the ground. Cauliflowers should be planted a few inches apart where they are to remain through the winter; a position well sheltered from easterly winds is of great importance; damp, heavy soil is objectionable. Thin Spinach to 6 inches apart. Prevent late Turnips from being crowded by timely thinning. Keep the hoe or prong at work among all growing crops as late as it can be done. Onions, if not already pulled, may be taken up to get them ripened before the season is too far advanced. If the weather should be wet, it will be advantageous to dry the bulbs under the roof of an open shed; and if they are hung up where they can be kept thoroughly dry, they will not be hurt by frost. If Carrots are showing signs of being attacked by vermin, lift them all at once before they are entirely destroyed. Carrots in many localities are among the most difficult crops the cultivator has to raise; though the ground be ever so good, the attacks of vermin may baffle every effort to grow sound roots. For nine years past we only succeeded three seasons in having the roots entirely free from the ravages of grubs, though every cure for the pest we read or heard of was tried, the ground being of the finest quality for root-growth. This season, with not the slightest care, a large breadth of Carrots, excellent in quality, shows no signs of vermin; one-half of the ground was trenched, and the other half turned over in a hurry. Both lots have done well, but on the trenched ground we have roots worth more than double the untrenched land has produced. Earth up Celery three or four weeks before it is required for use. Except it is growing very freely, a good soaking of manure-water will do much to increase the bulk of the crop. Celery collars (Simpson's patent) we have really found very useful. Their aid keeps the plants nice and compact, and helps forward the work speedily. Leeks may be helped forward by the use of manure-water and mulching; where earthing-up is intended, let it have attention before it

is too late to be serviceable. We have planted our late Leeks much further apart this year than usual, and also manured heavily, and we feel sure that the crop will make up its value in quality. Earlier lots sown and thinned out have been earthed up and in use more than a month, and will give all we can desire up to the end of the year. It is a good practice with all winter crops not to depend entirely on one sowing or planting. Lift Potatoes as the tops die down. If there is not time to spare for lifting the tubers, let all decaying tops and weeds be cleared away till a convenient time. Let them be stored dry if possible, and the covering should not be placed over them till excessive damp has evaporated. Much injury is often done to roots of all kinds by covering them up from the air when they are in a wet condition. Keep medium-sized tubers for seed, and lay them out thinly, if room can be spared. Any seeds which may have been saved should be kept free from the attacks of birds; they should be laid out thinly to dry, but not baked in the sun on a hot surface, as is sometimes the case, and the vitality of the seeds almost destroyed. Keep up supplies of salads; sow large quantities of Cress; sow more Radishes, and cover them with lights or other means. French Beans may now be sown in pits which can be heated, or in pots to take under glass. Gentle hotbeds, which can have a lining placed round them when the weather gets colder, answer well, and give supplies far into the autumn. Ridge Cucumbers can be helped in a similar manner. Vegetable Marrows can be kept in bearing condition late into the season by protection with hoops and mats, but glass protection is better. Tomatoes which were sown last month (with the view of keeping up supplies all the year round) should not be drawn up in heat; let the plants grow with plenty of light and air as long as it is safe to do so. Cuttings we have often found answer well, and have some on hand at present; like Cucumbers, they are more fruitful than seedlings. Capsicums can be brought forward in any warm position. If they are fully grown, they can be pulled out by the roots, and hung up where they can get heat from a chimney or flue. Herbs not gathered should have attention at once; dry them in the shade. Beds of warm horse-manure may be thrown up behind

a wall, or into ridges made firm preparatory for mushroom-growing. Pieces of spawn, placed 6 or 8 inches apart over the beds, and a covering of an inch of soil, may give good supplies of mushrooms for months to come. A good covering of hay or litter is neces-

sary as the season advances; and the same principle carried out with wooden shutters placed over the covering material to keep it dry, will give supplies all through the winter. In market-gardens scarcely any other method is adopted. M. T.

FORCING DEPARTMENT.

Pines.—Autumn and winter fruiting plants swelling off their fruit in various stages will require to be supplied with water often enough and in sufficient quantity to keep the soil steadily moist but not over wet. Colour the water every time with guano, or every alternate watering may be of clear manure-water made of sheep's or deer's dung with a little soot. Keep up a good supply of moisture in the atmosphere when the weather is bright, and syringe lightly over and among the leaves, but avoid wetting the crowns much, or they will get large and unsightly. Give a good supply of air on all favourable occasions, but always shut up with a high moist temperature in the afternoon, and start the fires sufficiently early to prevent the night temperature sinking below 75° at 10 P.M.; it may fall to 70° in the morning. A top-dressing of turfy loam and horse-droppings will be beneficial to all Pines swelling off fruit, first stripping off a few leaves from the collars of the plants. Let all fruit now colouring have a free circulation of dry warm air, and keep them comparatively dry at the root, avoiding, however, the starving process, by which fine juicy Pines are never produced. When more are ripe at one time than are required, remove a portion of them with their pots and foliage entire to a dry fruit-room, where they will keep for a long time at this season. That portion of the stock of Queens intended for early fruiting next season will not now require so much water at the roots, particularly in the colder and more sunless localities. All syringing of these overhead should be entirely discontinued, and the atmosphere should be less moist. The night temperature where fire-heat is required should not now range over 65°. If these are induced to grow under conditions the opposite of the above, they will continue to grow and be more likely to miss fruiting when they are required to fruit. Those

plants that are not so forward, and that are intended for a succession to those just referred to, may be encouraged to grow more freely for a few weeks, or until they have well filled their pots with roots. Let them at the same time be freely aired in fine days and not kept over moist. The early part of this season has in some localities been too sunless and wet for getting Pines intended for early starting to make a good growth, and if the autumn be fine, advantage should be taken of it to get a sturdy well-matured growth. All suckers on plants that have recently yielded fruit should now be potted for a succession batch of young plants. Potted at this date, 6-inch pots are large enough for wintering Queens, unless, indeed, the suckers are of extra size, when larger pots should be used. In potting these, select a rather light but very fibry soil, and mix a little bone-meal and soot with it; a 6-inch pot full of each of these manures to a barrowful of soil is enough. Pot the suckers firmly, and plunge them in a bottom-heat of 85° with a night temperature of 70° until they strike root, when 5° less of top and bottom heat will be sufficient. Avoid crowding these if they are to be wintered where plunged, and keep them near the glass, free from drip and otherwise dry. Should the weather be very bright after they are potted, shade them with some thin material for a short time. Give air freely when they begin to grow.

Vines.—Keep all Vines from which the fruit have been cut cool and airy, unless, indeed, it be in the case of any vigorously growing Vines, the wood of which may not be so far advanced in ripeness as is desirable. In their case keep a little heat in the pipes, and with a free circulation of dry warm air about them, they have yet good time to ripen. Remove every attempt at fresh lateral growth, which these and all established Vines may show. Where

there is any trace of red-spider, give the foliage a few good washings with water in which a little flower of sulphur is mixed. Early Vines intended for starting in November and December will be ready to prune by the end of the month. After they are pruned let all cleaning connected with them and the vinery be effected at once. If the surface of the border consists of close inert soil, remove it down to the roots, and substitute some turfy soil and a few half-inch bones and horse-droppings. Indeed this surfacing is desirable in the case of all Vines from which the fruit are cut; while the leaves remain green there is a chance of the roots striking up into the fresh soil before the leaves are shed. Recently-planted Vines that have made vigorous canes, that are not yet perfectly brown and ripe, should have a free circulation of dry warm air among them. They must not be allowed to grow any more; and if they have rambed and become thick of wood and leaves, remove a portion so as to let light and air play more freely about them. Keep all vineries where the Grapes are perfectly ripe, cool, airy, and dry. Look over them two or three times weekly, and remove any shanked or decaying berries that may appear. If Muscats and other late-hanging Grapes are not likely to ripen thoroughly without a little steady firing by the end of the month, let such be applied. Grapes, to hang successfully, should be ripe by the first week of October at the latest. A fresh healthy leafage is of vast importance in the case of these; and should any trace of red-spider appear, let it be got rid of at once by hand-sponging or otherwise. In localities that are subject to heavy autumnal and winter rains, the outside borders should be covered with wooden shutters or some other means of throwing off the rains, and it is a good plan to cover the inside border in autumn with a little loose dry earth or old Mushroom-bed dung sifted finely. This prevents evaporation, and the border from cracking. Pot-Vines intended for early forcing should now be thoroughly ripe, and be pruned at once as far as they require it. Place them in a cool place where they will not get either very dry or very wet at the root. The pot-Vine system is by far the surest and perhaps the best for Grapes that have to be ready for table by the beginning

of April, for it is seldom that any one set of Vines bears the strain of winter forcing for many years in succession.

Peaches.—Should there be any trace of red-spider on trees from which crops are all gathered, let them be vigorously syringed with clean water till it is conquered. See that these are not allowed to become too dry at the root when in inside borders. Where the growths are strong and yet green and soft, apply fire-heat and a free circulation of air until they are ripened. Crops in cool late houses will now be ripe; look over them every day, morning and evening, and gather those that are ripe. Push any leaves that may be shading the fruit aside to let the sun get fully at them. If it is desired to keep fruit for some time after being almost ripe, gather them a day sooner than usual and place them in close tin boxes on dry wadding, and put the boxes in the ice-house. In this way they keep well for fourteen days at least.

Figs.—Where late crops are swelling off on old free-bearing trees, give liberal waterings of manure-water and keep up a warm moist atmosphere until the fruit begin to ripen, when a free circulation of dry warm air is necessary to the production of highly flavoured Figs. When the last crop is all gathered, give the trees an occasional washing with the engine to keep the foliage healthy to the last. Young trees that have grown strongly should be kept rather dry at the root, and have a little fire-heat, if necessary, to consolidate the growths. Early-fruiting pot-plants, if they have not already shed their leaves, should be placed in a sunny warm place until they do so.

Melons.—Keep ripening crops dry and warm, with a free circulation of air on all fine days, and fully expose the fruit to the sun. Crops that are fully swollen should not have any more water, or they are after this season very liable to crack. Now that the nights are longer and cooler, apply fire-heat to prevent the heat from declining below 70° to 75° according to the weather, and grow with less atmospheric moisture.

Cucumbers.—Should mildew appear on the foliage of these, as it often does in autumn, dust the affected parts with sulphur, and keep the house warm and airy. Those that are yet in full bearing will now be the better of a slight

mulching of horse-droppings and loam. Keep them moderately moist, and with a night temperature ranging from 70° to 75°. Those sown last month will be ready to plant out soon after the middle of the month. Give them soil composed of turfy rather light loam, enriched with a little old Mushroom-bed material. Grow them on with a good supply of air, so that they may make a strong firm growth, and be the more able to go successfully through

the duller and damper weather which awaits them.

Strawberries in pots.—Still continue to prevent these from rooting through their pots into the material they are standing on. Keep them free from runners and weeds, and water with manure-water. If they are at all crowded give them more room, so that light and air can play freely about their foliage and crowns.



Notices to Correspondents.

ERRATUM.—Page 352, line 5, for “Mr H. Luke” read “Mr H. Tuke.”

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in the ‘Gardener’ to David Thomson, Drumlanrig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to, be forwarded by the middle of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

A NOVICE.—The proper time to bud Vines on the dovetail system is in spring, after the Vines have broken into leaf, and there is no chance of the Vines bleeding. Keep the grafts or young growths from which the buds are to be taken in some cool shady place laid in some soil, so that they may remain dormant till the stock is in leaf. The best union, however, in the case of Vines, is formed when both stock and scion are growing, and by uniting green wood to green.

S. M.—If your subsoil is clay, concrete, by all means. But place about 8 inches of broken bricks or stones over the concrete, and give a good slope to the front. And, running parallel with the extreme front of the border, and a foot below the general level of the concrete, have an efficient drain with a good fall, and pile up over this drain to the level of the rest of the site with broken stones. In your wet locality a third of the border should be above the ground-level.

ERICA.—Lift the whole of your heath from the bed, and trench it, and if possible add some fresh peat or sandy soil and leaf-mould; then divide your old plants, cut off portions of the old stumpy roots, and plant them much deeper than they were before, and keep them moist. This process will dwarf them, and they will root afresh on the young wood, and grow more fresh and vigorous.

P. R.—Fillbasket, Carter’s Prolific, and Cuthbert’s Prince of Wales, are all good Raspberries. The latter is an excellent variety, and grows and bears well wherever we have seen it. They can be planted as soon as they have shed their leaves—at least shed them all but a few at the top of the canes. Trench deeply and manure heavily.

AMATEUR.—Next month you may transplant your Rhododendrons with perfect safety. Indeed it is perhaps the best time for the operation. Should it be dry at the time, settle the soil well about them with water.

A LOVER OF FERNS.—You can get *Davalia Mooriana* from any nurseryman; at least any nurseryman can procure it for you. We make it a rule never to recommend tradesmen in these pages.

M. P.—Give more air and less moisture in every way now. The condition requisite to insure a good bloom in spring is thoroughly matured wood. We think you have over-potted your plants. Study an article in our last issue by the "Squire's Gardener," and act upon its suggestions.

A YOUNG GARDENER.—No; not just now at any rate. We think the object has so far been gained, and if our efforts in the matter have helped the cause, we are only too glad.

J. R.—As soon as you lift your plants, trench, or at all events deeply dig and well pulverise your beds, and plant your Hyacinths, &c. by the last week of October. If your soil is pure, mix in some well-decayed manure.—See 'Handy-Book of the Flower-Garden.'

S.—'The Art of Grafting' is not an expensive book. It should be studied by every young gardener.

C. T.—You had better defer pruning your evergreens now till the end of March, in case they suffer from frost after so wet a season.

A. L.—The best preserving Strawberry is the old Grove-end Strawberry. It is not a large fruit, and it boils whole if gathered dry. The flavour is good, and probably it will yield as great a weight of fruit off a given space as any other variety in existence. Keen's Seedling is too large and soft for making first-rate preserves. Plant at once in well trenched and manured soil.

T. L.—Your question is a puzzler to us. Can any of our correspondents tell why a Melon will not swell at all if not impregnated and perfect seeds are formed, seeing that, on the other hand, a Cucumber swells and grows to a large size without being impregnated and without perfect seeds? A hard nut, we should say, for physiologists to crack!

J. B. K.—Drain at least 3 feet deep, 8 yards apart. Trench the ground, turning up as far as the staple is good, forking over the subsoil, but leaving it in the bottom. We would not pare the turf off unless wanted for other purposes. Strawberries, if well manured, will do well after the Potato crop. Ascertain what Gooseberries and Strawberries pay best in your locality, and plant the same varieties. Ash Leaf Kidney Potato will do well in frames.


AMATEUR, STOCKPORT.—A low temperature, and a stagnant over-moist atmosphere when the Grapes are in bloom. The roots being in a cold, heavy, and wet soil, causing all the young roots to rot in winter, and, under such circumstances, when Vines are forced into bloom early and before young rootlets are again produced. General debility, especially in the case of Muscats. These are some of the causes which produce the results you are experiencing. When your Grapes are in bloom air freely; and when the pollen is dry give the rods a tap with the hand to help to distribute the pollen. Some growers syringe them when in bloom, and find it a good way to get Muscats and other shy-setting sorts to set. Our own practice is to give a little extra heat and air, and keep the house moderately dry; and we always find the treatment successful.

THE GARDENER.

OCTOBER 1873.



HORTICULTURAL ENERGY.

“ HERE are not many things impossible to human energy.” So spoke the Earl of Derby at the banquet of the Manchester Horticultural Exhibition, in perhaps the most interesting and sensible speech that ever was uttered at any horticultural gathering. We need scarcely tell our readers that we seldom wander into subjects which may be considered only distantly related to horticulture. But the sentence of the noble earl which we have quoted is well worthy the careful consideration of all aspirants in horticulture. Energy, it need scarcely be said, is of vast importance in any walk of life; and the energetic are sure to make their way and mark, often in spite of difficulties, and always when circumstances are anything like favourable. If such horticultural gatherings as the recent very successful one at Manchester have stimulated and advanced the science of horticulture, they have done so mainly by rousing and calling out the energies of individual cultivators.

Those superlative examples of fruit-growing which have been exhibited on such occasions, we would impress on the minds of our younger brethren, were not the result either of chance or magic. No! They were the result of labour—plodding, continuous, and untiring labour. They were so many splendid results developed from the womb of nature, at the price of well-directed energy: at times, it may be, exhaustive, and demanding the sacrifices of rest and ease. Who, of the mere uninitiated spectators at Manchester Exhibition, could sum up the amount of energy, skill, and care required on the part of a culti-

vator in the far north to enable him to bring to such perfection such a splendid general collection of fruit; to pack them, and carry them for hundreds of miles, and stage them with a freshness and bloom as if they had never been touched,—thus enabling him to take first honours against others from the better climate and soils of the south, and even backed by all the resources of a regal establishment? Or who of them could fully appreciate the energetic attention and good generalship which enabled another to bring such magnificent clusters of Grapes, in the most unique order, from the indifferent climate of Durham and the smoke of its coal-pits? Or that which enabled another to stage, from under the dripping cloudy skies of Westmoreland, the largest Queen Pine on record?

No matter what amount of money a gentleman spends on his garden and hothouses, unless there is the determined and energetic and intelligent application of the means allowed, the productions must of necessity fall short of being first-rate. This must hold good as a rule; while, on the other hand, many first-rate cultivators have to cope with the most untoward circumstances, which any amount of energy can never overcome—and such men are the objects of pity and not of blame.

Energy and excellence in the highest profession or humblest calling are, from many combined reasons, indispensable in order to succeed; and our young brethren who yet have the chance more or less of making their position in the horticultural world, should live and work under the impression of that fact. If they will learn to labour and to wait, it will not matter much whether their sphere of action be the more favoured counties of the south or the more barren north; if they are studious, energetic, and painstaking, they will make their mark. And we would remind them that it is not necessary to labour under the most favourable auspices to be able to send forward the largest Grapes and Pine-Apples on record. If a gardener is idle, slovenly, and careless, he is almost certain to be one of those who are heard complaining that their calling is overdone and the market glutted. The sooner these relinquish the garden the better for it and them. It has been said of labour that it is the arch elevator of man, and that patience is the essence of labour. Whether that be rightly put or not, it is scarcely necessary to say that success and position in gardening are inseparable from well-directed labour and patience. We are not now speaking of exceptions, but of the rule. Successful gardeners must think hard—and that is hard work, harder than trenching—and they must work physically too. We never knew a kid-glove gardener that was much of a power in the horticultural world. We do not mean by this that a gardener at the head of a large horticultural establishment is regu-

larly to take off his coat and tuck his sleeves up, but there are certain things to be done in a garden which few eminent cultivators ever delegate to others. Indeed, so far as the principle now under consideration is concerned, true life in any sphere is inseparable from effort and exertion, and the life of a true and successful horticulturist is particularly so. We are not now speaking of those make-believe powers which would like to have gardeners revolving round them as satellites to reflect only their own borrowed light, but of those who, with wearied limbs and throbbing brows, have brought horticulture to what it is.

Sorry we are that, while we thus comment on the Derby text and impress its imprint on the minds of gardening aspirants, we cannot point to a more remunerative goal within the reach of even the most successful. And while we challenge any one to contradict what we have advanced as being the necessary elements of success in a gardener's character, we avow it is grievous and passing strange to think how gardeners are rewarded for their intelligence, character, and energy as compared with a valet or a footman. It would be well if employers would institute a careful comparison between what a valet or a footman costs them and what a head-gardener is paid, and if the comparison resulted in their making a careful selection of their gardeners, and paying them much better, none concerned would profit so much as employers themselves.



PLANTING FRUIT-TREES.

OUT of the window I can see an Apple orchard, every tree in which is like a good-sized Chestnut-tree; they bear fruit in cart-loads. At the time when those trees were planted, planting was considered a very simple affair—good deep holes were dug in the turf, the trees put in in rows, and plenty of soil packed around them to keep them steady, and the work was finished. It must be owned that many a fine Plum and Apple tree has been grown, from which many bushels of fruit have been gathered almost annually, with very simple planting, and no management whatever afterwards. That style of planting is not to be recommended nowadays; there are better modes, as well as the best mode, for every particular tree.

Certain sorts of fruit-trees are found from experience to do best on particular qualities of soils, and when the natural soil happens to be of the right nature the tree will thrive with very little trouble; but where the natural soil is unsuitable the wants of the trees must be studied, else comparative failure will be the result sooner or later.

Again, the finer varieties of fruit, for instance of Apples, which are

most acceptable at table either as kitchen or dessert fruit, will be found not to succeed under the rough-and-ready planting and management which the coarser and strong-constituted cider-Apples are indifferent to ; but we must not forget that many of our best Apples are equally robust, for instance, the Old Nonpareil, Hawthornden, or Ribston Pippin ; yet the Kerry Pippin, Lady Margaret, and Cox's Orange, scarcely less fine in quality, will grow to the magnitude of forest-trees in company with the cider-Apples. It is, therefore, necessary in forming new plantations of trees that the best conditions be provided for them if a selection of sorts be aimed at.

No fruit-tree will thrive long in an open gravel, sand, or thin chalky soil without very heavy top-dressing, and not even then. Speaking generally, Pears do best on clay soils or soils of a stiff texture ; Plums and stone-fruits are best on the chalk ; while Apples do best on the lighter sandy soils of good depth, and on peaty soils. It must not be supposed that we hold that these various trees will grow in these soils and in no other ; we only mean that those general remarks will give the clue to the planting and choice of soils for the various orchard fruits, where the natural soil is unsuitable.

We have just seen an excellent result following the removal of chalky flinty soil, and the substitution of a clayey soil, on a pretty extensive scale in a first-class garden in Wiltshire, the object being the cultivation of the finer Pears. It was quite clear that, when the best results are aimed at, in the case of the Pear it is as essential to have a made border for that fruit as it is for the Vine. Plums, Peaches, and Figs were doing grandly in the soil which was poison to the Pear.

No one thinks nowadays of planting without thorough drainage ; but we think there is often much unnecessary draining practised. Much of our annual rainfall is carried away by drains, which would be of immense value in summer if consumed in the soil, provided it does not get water-logged from the configuration of the surface. It is water from below which causes most mischief, or overflow water from a distance. In many instances the orchard or fruit-tree border would be quite safe, and even benefited by the want of drains : and we can point to some which would be much improved by being concreted underneath, for the purpose of conserving the rainfall and preventing the roots wandering down into a deleterious subsoil after moisture. A very open gravel should be concreted when it happens to be the subsoil of a fruit-tree border, or puddled with clay.

High planting—that is, spreading the roots on or near the surface, and slightly mounding the soil round and over the roots—is a good rule, but one which should not be by any means universally applied ; it is often better to plant deep where a soil is shallow, or on very sloping

ground, that the trees may have full benefit of rains and mulchings; on the other hand, on stiff clay soils high planting is advisable, for another reason, namely, to get the heat of the sun, as well as to throw off rains, as stiff soil does not so readily get heated in spring as light, being more retentive of moisture.

This and the next months are the best in which to plant all sorts of fruit-trees before the leaves are all quite fallen off; they will then have time to make considerable progress at the root before winter. Trees against south walls may remain a little later, for if there be many bright hot days in October, the wood is liable to shrivel; a wall will even in October get very hot and trying to a newly-planted tree. Trees which have become shrivelled will generally come all right again in winter, and we have found them even bear a heavy crop of fruit the following season, as if nothing had been the matter; when signs of shrivelling are noticed the tree should be shaded and syringed in the evenings.

A few general observations on planting, which may only be mentioned as reminders to the inexperienced, are these: to dress all strong roots by cutting off the bruised ends; to cut out twisted roots and spread out the fibres carefully; to secure the trees carefully to stakes for the time being, but not too tightly or permanently, as the soil will sink, and consequently the tree.

It is very essential to tread all moved soil as firmly as possible under the tree, and afterwards when all the soil is filled in. Avoid all gross manures in the soil for young trees. Avoid planting trees which have often been cut back in the nursery, and are consequently full of dead snags and old cuts, or trees which have been injured by rabbits and hares; these last seldom ever do well, and are a perpetual eyesore.

THE SQUIRE'S GARDENER.



STOVE-PLANTS FOR EXHIBITION.

(STEPHANOTIS FLORIBUNDA.)

THIS plant is one of the most beautiful of all stove-climbers, and may be taken as the type of what a decorative plant should be. It possesses a good constitution, grows freely if liberally treated, has abundance of dark fresh green foliage, which, together with its pure white, wax-like flowers, is of good substance, while the latter are both graceful in form, and most deliciously perfumed. It makes a fine and effective plant in the exhibition tent when covered with great clusters of snowy blossoms on a dark background of cool green foliage, and it has the advantage of flowering throughout the summer and autumn

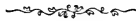
months, just when exhibitions are most numerous. It is also distinct—no mean consideration in a collection of exhibition plants, where striking contrast conduces almost as much as good culture to an exhibitor's success. Too much stress can scarcely be laid on the observance of the latter fact, since growing plants to perfection and showing them off to the best advantage are qualifications not often found in the same exhibitor. The *Stephanotis* is easily propagated any time during the spring or early summer by taking off the lateral branches or shoots when two or three inches long and inserting them in a well-drained cutting-pot, which should be plunged into a genial bottom heat of 70° or 80°, and kept comparatively close and humid until roots are emitted. The plant is also freely increased by seed, which is occasionally borne in fleshy pods the size of a Jargonelle pear, the stalk being at the thick end. Seed germinates very quickly if sown as soon as ripe, and the seedling-plants grow far more rapidly than cuttings, though they do not as a rule flower so early or so profusely; hence cuttings are in general to be preferred. The compost must be both hearty and moderately rich, as the plant is a gross feeder; and in order to induce a tendency to flower profusely, let its roots get confined in the pot. When the soil is exhausted, a few doses of clear liquid manure are highly beneficial, especially after the flower-buds make their appearance in the axils of the upper leaves. Two parts of fibrous loam, one part of peat, and a fourth of well-decayed leaf mould and rotten hot-bed manure mixed, makes a fine compost for this plant, with the addition of a handful or two of coarse sand. Young plants should be encouraged to make vigorous growth, as a tendency to flower is easily induced by temporary starvation, or moderate dryness at the root. When the flowers once begin to show, growth may again be encouraged, as a cluster of pearly blossoms will then appear in every succeeding axil in regular succession. The plant should be neatly tied or trained on a balloon trellis; and after it is well covered with foliage, train the ends of the shoots up single strings, close under the glass, and allow them to get the full sun, with plenty of heat and air. This induces short-pointed, well-developed wood; and when assisted by a judicious use of the watering-pot, as above recommended, is a certain method of flowering this beautiful plant to perfection. Shoots grown close to the glass in this way are not unfrequently covered with clusters of snowy blossoms and pale green buds for five or six feet, and go on flowering and producing fresh clusters of buds for weeks together. When the plant is required for exhibition, the shoots can be taken down and arranged so as to cover the plant; and a day or two suffices to open out the flowers if the plant is placed in a light and sunny position. If the plant is too forward it will bear

removal to a greenhouse, or into one of the back sheds, where moderate coolness and close shading will keep the flowers from expanding too rapidly. One fact should be borne in mind, namely, that this plant looks better a week before its best than a week after, as a profusion of fresh flower-buds, with but a few open clusters, is a far more enjoyable sight to a plantsman than a specimen covered with fully-opened clusters past their prime, and partly yellow with age.

The time requisite to grow on and flower an established specimen varies from five to six months, so that a plant required for a June show should be started into growth early in February. After flowering, plants should be fully exposed to the sun and air, so as to ripen the wood, which should be cut back in the winter or spring before the plants are started, so as to get a supply of strong shoots from near the base. In order to start the plants, plunge the pots in a tan bed, or over the hot-water pipes, and syringe them freely on warm sunny days. After root-action and growth commence, turn them gently out of the pots, and give them a shift, carefully picking off all superfluous old soil and decayed roots with the fingers, as a stick is apt to bruise the young roots. Large pots are not necessary for this plant, as fine specimens may be grown in a twelve-inch pot if liberally supplied with manure water, as before recommended.

Besides its value as an exhibition plant, it is useful planted out in a stove and trained up the rafters, producing immense quantities of its delicately-perfumed flowers, which are simply invaluable for the drawing-room vase, or for bridal and other bouquets. A cluster of *Stephanotis* flowers, backed neatly with a spray or two of *Davallia* or *Adiantum*, makes an effective ornament for ladies' hair; and about three pips, neatly mounted with a spray of *Davallia* and a few flowers of *Forget-me-not*, makes a charming "button-hole" bouquet for evening dress.

F. W. B.



NOTES ON HARDY CONIFERS.

TAXUS (THE YEW).

THOUGH limited to only two or three species, and even these regarded by some botanists as specifically identical, this genus is remarkably rich in distinct and useful varieties—many of them possessing in such a high degree those qualities so desirable in out-door decorative shrubs, that they form a prominent feature in almost every ornamental plantation.

It has a wide geographical distribution, the various forms being found more or less abundantly over North America, the temperate

parts of Asia, and most of the countries of Europe, generally at high elevations, frequently extending to 4000 feet above the sea-level, but thriving best in sheltered valleys, where they attain the dimensions of large timber-trees.

The wood, which from its strength and elasticity was extensively employed by our ancestors before the invention of gunpowder in making bows, is now highly valued for artistic cabinet-work, turning, and carving. It is of a beautiful brownish-red colour, sometimes nearly white, frequently veined, very hard, close-grained, and susceptible of receiving a high polish.

All the sorts are of slow growth, particularly after the first few years, or after they attain heights of from 15 to 20 feet—their tendency then being to increase in breadth rather than in height.

Few shrubs are less fastidious in regard to soils and situations; and handsome specimens are to be found in every district of the country, growing and thriving in almost every variety of soil. There is no doubt, however, that they prefer a deep rich loam, with a sub-soil cool and moist, and a situation moderately sheltered and shady rather than exposed to the full rays of the sun. They are, indeed, among the few evergreens that succeed well in the shade of high trees, not only growing well in such circumstances, but developing the peculiar dark glossy green of their foliage to the greatest perfection.

T. baccata (*the English Yew*).—The European form of the genus is indigenous to Britain, and also found abundantly on most of the great mountain-ranges of the Continent, including the Alps, the Apennines, the Pyrenees, and the Caucasus, at elevations of from 1000 to 4000 feet.

This shrub or small tree, even when at full maturity, rarely exceeds 30 or 40 feet in height, with a trunk remarkably thick in proportion to its length, in some instances exceeding 50 feet in circumference at the base, the long spreading branches so abundant, and so densely clothed with branchlets and foliage in isolated specimens, that the stem is completely covered from the ground upwards.

Though cultivated in British gardens and pleasure-grounds, in churchyards and cemeteries, from time immemorial, this grand evergreen is still as popular as ever—indispensable among ornamental plants, occupying a place peculiarly its own, and forming the most effective contrast with most other shrubs, whether in groups or as single specimens; while the deep sombre green of its foliage and its stiff formal aspect suggest to every mind its singular appropriateness as an adornment to the resting-place of the dead. A popular writer, himself now reposing under “the yew-tree’s shade,” aptly says, “For the decoration of places of burial it is well adapted, from the deep and

perpetual verdure of its foliage, which, conjointly with its great longevity, may be considered as emblematical of immortality."

Having naturally a dense twiggy habit of growth, and as it may be clipped or shorn into almost any shape with the greatest impunity, the English Yew has few equals as a garden hedge-plant, and as such has long been extensively used; and in the days now happily passed away, when it was fashionable to adorn gardens with shrubs cut into architectural forms, as well as into those of animals, and even man, its patience under the knife was amply taken advantage of, producing some of the most grotesque and intricate designs, with a solidity and sharpness of outline superior to either Juniper or Box.

From a long list of varieties we select the following as distinct, and worthy the attention of planters of choice shrubs:—Var. *fastigiata*, well known as the Irish Yew, is so different in habit of growth, foliage, and general appearance, that it is difficult to believe that it is not a distinct species. This fine form was found in the year 1780, growing among Juniper-bushes, on a mountain near Benoughlin (Lord Enniskillen's estate) by a tenant, who brought it to Florence Court; and it is believed that from this plant all those now in cultivation originated. Seeds saved from this form rarely if ever yield anything else than the species, proving satisfactorily that it is neither more nor less than one of these strange sports which occur from time to time among many other plants. It differs from the species in its erect columnar habit of growth; like that of the Lombardy Poplar, the leaves are disposed either in tufts or scattered irregularly along the branches, instead of in two rows; and the berries, instead of being round, are distinctly oblong. Two beautiful variegations of this variety have been introduced into cultivation, the one with its green leaves intermixed with white, the other with bright yellow, and named *argentea* and *aurea* respectively. Both, particularly the latter, are great acquisitions, and though as yet comparatively rarely seen, will doubtless be extensively planted as soon as their merits become better known. Var. *Cheshuntensis*: this variety resembles the Irish Yew in its close upright habit, but is more conical, with the branches more diffuse; it is said to have originated from seed saved from the Irish Yew; it is very distinct. Var. *Dovastonia*: this sort is one of the finest of the sports from the species; the leaves are much longer, of a dark glossy green, and the branches long and pendulous; when the main stem of this fine plant is trained carefully up, and the side branches allowed to droop, it forms a beautiful lawn specimen-plant; it is sometimes grafted on stems of the common sort, and forms a neat standard weeping shrub, with branches shooting out horizontally and

drooping at the points. Var. *glauca*, sometimes called *Blue John*, is a very striking variety of free vigorous growth, and of a more spreading habit than the species, but differing more particularly in the colour of the leaves, which are deep green on the upper surface, but on the under of a peculiar bluish-grey, while the bark on the young shoots is of a rusty brown; it is a very desirable and interesting plant. Var. *fructo-lutea* differs from the species in no other respect than that its berries are of a bright golden-yellow. Var. *aurea*, the Golden Yew, is one of the most beautiful of variegations, presenting a brilliancy of colour which is unsurpassed among variegated Conifers, and which is invaluable as a contrast in mixed groups; this sort is sometimes grafted on the top of both the Common and the Irish Yews, in each case with grand results. Var. *elegantissima*: this is another variegation, rather straw-coloured than golden, very distinct from the last, and equally valuable whether on its own roots or grafted on the English or Irish sorts. Var. *ericoides*: this variety differs only from the species in its being much more slender in all its parts; it is an interesting tiny shrub, and suitable for small beds or front rows of the more robust-growing shrubs. Var. *erecta*: this is a neat, close-growing, conical-shaped shrub, densely clothed with smaller leaves than the species, and forming an attractive lawn plant; a pretty variegation of this variety is in cultivation, with blotches of gold intermixed among the green leaves, and has been named *erecta aurea variegata*. Var. *nana*, or *Foxii*, is a very dwarf variety, rarely rising above 2 feet from the ground, the branches slender and spreading, interesting for planting on and around rockeries, or on the margins of small beds.

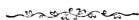
T. *adpressa* (*the Flattened or Creeping Yew*), by some authors believed to be only a variety of *baccata*, is a native of mountains in Japan, from whence it was sent home to this country a few years ago. In its native habitats it is rarely found higher than about 7 or 8 feet, forming a spreading, flat-headed shrub, with numerous branches, densely furnished with short branchlets, thickly clothed with short, flat, dark-green leaves. On its own roots in this country it presents very much the appearance thus described, and is only really useful for rockeries or small beds, in which situations it is very distinct and interesting. Grafted, however, as it now very often is, on stems of the English or Irish sorts, it is one of the prettiest of weeping shrubs, and ought to be extensively planted in choice collections. Of this species a variety named *A. stricta* deserves attention, having a more vigorous habit, more upright, and can be trained to a single stem with greater facility, forming a neat dwarf front-row shrub.

T. *Canadensis* (*the Canadian Yew*).—Like the preceding species, this is believed by some botanists to be only a variety of *baccata*. It is

found wild in considerable abundance in Canada and the United States, growing in shady situations, from whence it was first introduced about 1800. It grows about 4 feet high, and has a spreading bushy habit of growth, with short, pale glossy-green leaves abundantly clothing the branches; the bark is of a dark-brown colour; the berries, which are smaller than those of *baccata*, are of a bright coral-red, rendering the plant very attractive when they are ripe, as they are generally produced in great abundance. It is a distinct and interesting dwarf shrub, quite hardy, and of free growth when planted in a moderately moist, sheltered situation. A variety of this species, named *Washingtonii*, has its leaves prominently variegated with a bright golden-yellow.

T. Lindleyana (*the Canadian Yew*), by some botanists called *baccata Americana*, found in valleys and on river-sides in Northern California, is described as a handsome tree of from 20 to 30 feet high, and from 4 to 5 feet in circumference near the ground; the branches are long, slender, somewhat pendulous, and covered with a yellow or light brown bark; the leaves, which are produced in great abundance, are very similar in size and shape to those of *baccata*, but of a light-green colour. In a young state this plant is very distinct and pretty. It seems to be quite equal to our climate, and promises to be a useful and interesting acquisition to our collection of ornamental shrubs.

HUGH FRASER.



GOLDEN CHAMPION GRAPE.

I HAVE a strong impression that, if this Grape was to receive special treatment, the fatal spot which affects it would to a great extent disappear. It is a Grape that wants time to grow and ripen, and a dry atmosphere. We have it here, grafted on Black Hamburg, in two different houses. In one house, which has been subjected to a good deal of hard forcing for the last two years to get the crop in at a desired time, the Golden Champion is simply unrepresentable. In another early vinery, which is thrown open day and night as soon as the Hambros and others begin to get ripe, by which time the Champion is generally still green, it has always finished well. This season a bunch in this house was allowed to hang a month or five weeks after it was quite ripe, and when cut it was still plump and without a blemish. It is such a magnificent Grape when dished up, if free from specks, that one is to be excused if they fall freshly in love with it, and resolve to keep it on and give it another trial. So far as my experience goes, I should think it is a Grape which wants no more assistance in the way of fire-heat or forcing than will just enable it to

ripen during the most favourable part of the season. Those who have facilities I would recommend to try what the result would be if allowed to come away naturally about April or May, keeping the ventilators always open, except in wet weather, and in fact giving it little more than the protection of glass, using fire-heat chiefly to dispel damp. This plan has at least cheapness to recommend it; and no one will deny that it is a Grape well worth making an effort to grow successfully. Could it be presented at dessert in good form, it would put Muscats to one side for the time, not on account of its appearance only, but its flavour, which is so excellent and refreshing.

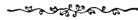
I have an impression that it would do better out-doors in the south, in a warm situation, than inside a vinery; and I hope those who have opportunities will try it on the hardy system.

No doubt the "spotting" is due to the very tender skin of the berries. The least thing injures it, and leaves a lasting blemish; and it is reasonable to suppose that a high and moist temperature will have the same effect upon the berries as upon the leaves of Vines—*i. e.*, to make them still more tender and susceptible of injury. Thinning the berries should also be very carefully performed: it should be done twice; and great care is necessary not to injure the berries that are left with the scissors, which should be clean and smooth.

The Golden Champion, like some others of its class, does not bear so well when pruned on the close spur system. It is a good plan to leave a bit of young wood, and a better show of fruit will be the result, which will give a choice of bunches, for they vary much in the setting, some having a greater proportion of small berries than others.

J. SIMPSON.

[If those who grow this noble Grape will ventilate freely, and keep it dry whenever it approaches the ripening point, they will not be troubled with spot.—ED.]



HINTS FOR AMATEURS.—OCTOBER.

FRUIT-GATHERING must now be carried on expeditiously, handling Pears with great care, otherwise they will show bruises and decay quickly. The store-room should be perfectly dry, well aired for some time after the fruit has been gathered in, and then kept close and dark. Fruit-tree planting may be commenced as early as the trees are in condition, and that is when the leaves are about to fall: pure loam is necessary when a permanent tree is wanted, and the roots should be spread out 6 inches under the surface, covering them up with good soil and a quantity of litter to keep out frost. Though fruit-trees are often planted as late as April, they, as a rule, do best when planted in

autumn, and a season's growth sometimes is gained. The distance apart at which fruit-trees are generally planted is varied according to circumstances ; when variety is wanted, they can be planted very close, and lifted to keep them to size and in a bearing state. Extra numbers may be planted to be kept as "reserves" for planting up space where old trees are worn out in the course of a few seasons. Nothing should be allowed to stand which is to be of no use. Gooseberries and Currants which are not doing well should be lifted and transplanted to fresh ground. When plots of them begin to die off piecemeal, it seems a pity to make them up with young plants, which will likely do little good ; large quantities of soil may help them, but planting in fresh ground is always attended with good results. We have seen bushes almost worthless become vigorous when thus removed and bear abundantly. Wood on wall-trees should not be allowed to grow after this, as it would only tend to make the tree liable to be injured by severe weather. Thorough ripening is very important in this damp climate. We have already dug under a portion of the roots of young Plum and Apricot trees which were growing over-luxuriantly ; the wood is now becoming firm, and the leaves are stiff. A number of older trees have been examined to get the leading roots out of the cold subsoil, and a good mulching of rotten manure and strong loam well mixed will be spread over the surface to protect the fibre near the top, and induce roots to form upwards. When roots grow down into cold wet clay, all hopes of plenty of fruit or healthy trees are at an end.

While the leaves continue to fall, lawns and pleasure-grounds will be untidy, and where they cannot be kept swept up daily, it is well not to let them collect in quantities, as is generally the case, to disfigure the grass. While the wind can move them about, little harm is done. If mowing has yet to be performed, it should never be done closely at this season. Worm-casts will be very troublesome in some places. Lime-water will help to get rid of the worms. Rolling should be done frequently to both grass and walks. If flower-gardens are yet untouched by frost, much trimming and clearing of the beds will be necessary ; high keeping will always do much to make the garden interesting. Lift all plants of value before they are cut down by frost. One can now see the value of hardy plants in the flower-garden. Where there are quantities of foliage plants in the reserve garden, a very tidy appearance can be made through the dreary winter months when such is most required.

Bulb-planting may be performed as soon as the soil can be prepared. All bulbs, though hardy, do all the better when protected from frost. Beautiful designs can be made in the beds with the ever-useful Crocus class. The colours are so numerous and bright, and they are very

easily managed ; mixing them with foliage plants, either in masses or bands of different colours, gives a gay appearance. All bulbs do well in rich soil well drained. Tulips are generally planted in November. Ranunculuses and Anemones are generally planted in January or February, but the ground for them may be prepared at any time by deep digging and manuring. Hyacinths, Narcissus, Crocuses, Jonquils, Irises, Crown Imperials, Scillas are among the leading kinds for present planting, and all these may be grown in pots of sizes, singly, or in numbers of threes, fives, or sevens in each pot. When they are taken from under the old tan, ashes, or whatever has been placed over them, they should be kept well aired, and no frost allowed to touch them. When the pots of rich soil are filled with roots, plenty of manure water may be given. When forcing is done, very strong heat should not be given, as weakly and worthless flowers would only be the result.

The present will be a busy time getting the plants which have stood outside under glass. All this work should be completed as early as circumstances will allow. Chrysanthemums should be staked, the pots washed and surfaced with good rich material, and be taken to their blooming quarters ; or if for conservatory work, they may be placed under the shelter of an orchard-house or similar structure till wanted. Keep Heaths and all hardwooded greenhouse plants where they can have plenty of fresh air. Let no dirty pots be staged, and examine drainage for worms ; and the mischief they may have done should be put right. Let all decayed leaves be removed wherever they are seen, and avoid crowding specimens ; better a few good plants than large quantities of worthless stuff. If softwooded plants, such as Cinerarias, Primulas, and Calceolarias, can be kept by themselves, so much the better ; they then can have air and general treatment to suit them. Auriculas, Polyanthus, and suchlike, can be managed better by themselves. Forcing shrubs and other things for winter decoration should be under cover, and not allowed to have the soil frozen in the pots. China and Tea Roses flowering in pots require plenty of air and careful watering. Keep all structures except stoves dry, and keep a pure atmosphere.

M. T.



THE CHINESE AZALEA.

(Continued from page 417.)

IN order to make Azaleas continue for a succession of years to yield a plentiful crop of strong bold blooms, the plants must of course be kept in health without being caused to make over-gross growths. A certain amount of healthy growth every season, and a thorough ripening of

that growth, is necessary. Supposing that we have to deal with a set of young plants in 8 or 9 inch pots that have bloomed freely, two courses are open to the cultivator, just according to the object he has in view. If he wants to have moderate-sized plants for special purposes or reasons, and if the plants were shifted the previous year, they need not be repotted. But as soon as they have done blooming, let all the seed-vessels be removed, and give the plants a vigorous syringing, and then place them in a cool place to rest for a time. This resting is especially applicable to those which may bloom, without at the same time forcing their wood-buds into growth. After resting for a few weeks, place them in stove heat, shade them from bright sunshine, and syringe them freely every fine afternoon, and shut up with sun-heat, raising the thermometer for a time to 85° or 90°. Give more or less air every day. If they are thoroughly well rooted, they will make an even growth all over the plant; but should any shoots much outstrip the others, pinch them back and they will break again. Supply them copiously with water at the root, never allowing them to touch the flagging point, and avoiding, on the other hand, a soddened condition. When watered, make sure that they get a thorough soaking; and if the plants show signs that a little stimulus in the way of clear soot or very weak guano-water would be beneficial, let it be applied at every third watering. Continue this heat and moisture treatment until the flower-buds can be felt between the finger and thumb. Then the heat may be gradually decreased and air increased. They should also be gradually inured to more sun until exposed to the full force of it, to ripen them thoroughly before the autumn. In some climates, where there is no chance of their being soddened with rains, they may be stood outdoors for a month in the full sun.

If it be desirable to increase the size of the plants with as much speed as possible, the plants should be shifted as soon as, after resting, they begin to grow freely. In this case, do not water so freely, but syringe the same as already directed, until they begin to bite the fresh soil, when they will of course take a full supply of water. Any rampant growths should especially in this case be kept pinched back, so as to balance the growth and symmetry of the plants. Of course shifting in any case is only desirable when the plants are thoroughly well rooted; but when rapid growth into big plants is the object, they should never remain so long in one pot as to become stunted and weak in growth, or it will be difficult to get them to become so vigorous after they are shifted.

When for special reasons it is undesirable or impossible to shift annually or biennially, and after the plants have bloomed profusely in the same pot for a few years, they become weakly, and do not make

growth sufficient to bloom satisfactorily, the best way is to cut the plants severely back into the old wood, allowing them to break in a moderate heat; then to allow them to become rather dry, and partially shake the soil from them, and repot in fresh soil in the same sized pots. Thus reduced at top, and supplied with fresh soil, they will make strong growths that will yield finer blooms than if left undisturbed, and will go on by the aid of stimulants to bloom satisfactorily for a few years again.

The secret of successful Azalea-culture lies in making them produce a moderately healthy growth annually, and thoroughly ripening that growth. All other things being equal, this insures a crop of fine strong blooms.

The Azalea can be had in bloom from October to July, and no plant repays good culture with a more gorgeous display of bloom throughout the winter months. The way to get an autumn bloom is to force the plants early into growth in stove-heat near the glass, keeping them in heat until their buds are prominent, then to rest them awhile, and put them in a gentle heat the end of September. I have for years practised this course with success. The best condition of plant for this early blooming is a young healthy plant well rooted, but that has not stood long enough in the same pot to get any way stunted. When they have opened their blooms thus early, they stand in bloom for many weeks in a moderately dry atmosphere at a temperature of 55° at night; and I have seen them stand in sitting-rooms for a long time: and few plants so charm as a well-bloomed Azalea in the end of October and on through the winter months.

Some varieties are much better for blooming in autumn and winter than others, and among those which I have found most desirable to grow for this purpose are Iveryana, Le Lion de Flandre, Clapham Beauty, Punctulata, Roi Leopoldii, President van den Hecke, Fielder's White, and of course the old Amœna, as well as the varieties of Triumphans.



FLORIST FLOWERS.

THE HYACINTH (HYACINTHUS ORIENTALIS).

THE Hyacinth is a native of the Levant, an old and valued inmate of British gardens, and was cultivated in the time of Gerrard at the end of the sixteenth century. Gerrard mentions the single and double blue, the purple and the white varieties existing at that time; and there is every reason to conclude that the Dutch possessed many improved kinds. Parkinson, some thirty years after, enumerates eight varieties,

and so on. We still find the Hyacinths improving in quality, increasing in numbers and value. Only single kinds were first cultivated. The first named double we find on record was named "Mary," raised in the commencement of the last century by one Peter Voerhelm. Mention is also made of another by the same raiser called the King of Great Britain—which brought £100 sterling. Haarlem has been long famous for the cultivation of this root, as well as successful in raising countless new varieties. So enthusiastic were some of the growers in pursuit of double sorts that as much as £200 has been given for a single root.

Propagation.—The Hyacinth may be increased either by means of seed or by its off-set bulbs. It is useless to discuss its culture from seed here, so we shall confine our remarks to the method of rearing young bulbs to maturity. So, at the outset, we shall suppose that the parent plants which are to supply the off-sets are in pots. Those plants have just done flowering, the flower-stems should be cut out and the plants moderately supplied with water until indications of ripeness appear by the foliage assuming a yellow tinge, when the bulbs ought to be shaken out of the soil and put on boards to dry in the sun; after which the withered foliage should be cut clean away from the crown of the bulb, and have the young bulbs separated from the old; then prepare suitable bed in which to plant the young. To do this properly a warm dry corner should be fixed on; then have as much leaf-mould and sand wheeled on to it as will raise the bed, when trenched, 5 or 6 inches above the general ground-level. In addition add a fair proportion of rotten cow-manure, and proceed with the trenching. The bed being in readiness, plant the bulbs in rows, inserting them 2 inches below the surface and 15 inches between the rows; this will admit of rows of some slender annual being sown between the bulbs, which will enliven the spot without hurt to the bulbs. Any time in October will do to plant the off-sets, but the ground should be rather dry. Preserving the bed from weeds, and cutting out the flower-stems before flowers get formed, is all the labour entailed in the succeeding two years; but in the autumn of the third year the bulbs will generally be fit to plant in beds to flower the following spring.

Culture in Beds.—As soon as the summer flowers have been removed from the beds have them deeply dug and well manured for the reception of the Hyacinths. This should take place in October, and besides digging the beds they ought to be neatly edged if on grass. Proceed next to plant after this plan:—First line the bed regularly into divisions of 9 inches between rows, and dibble holes on the lines 8 inches apart, then plant the roots into the holes so that they are 3 inches below the surface. When the bed has become com-

pleted it is advisable to plant close to the margin a line of Crocus, inserting them 3 inches apart. The Crocus will be the first to make a feature in the spring, and will continue to impart a lively effect to the bed up to the period when the Hyacinths bloom.

When the flower-stems reach a height which endangers them being broken by rain or wind, they should be supported by means of short stakes. These should reach no further than the base of the flower-spike. And when the flowers have withered lose no time in removing the flower-stems, but preserve the foliage to the last moment you can allow them to occupy the bed, which will in a great measure favour the ripening of the roots.

Culture in pots.—Those intended for early forcing should be planted as soon as they can be obtained from the nurseryman, and instead of plunging them in the usual manner out of doors, have them packed beneath a stage in a rather close greenhouse or frame, sifting some coal-ashes over them to protect the bulb from drying. Give no water for the succeeding ten days, then enough to wet the entire ball. Observe that all the bulbs are planted firmly into the soil, and sufficiently deep to prevent them being started out of the soil when the roots protrude from the bulb in a body, as they naturally do. This is prevented by examining them daily, and pressing firmly down those that show a disposition to start from their bed. The soil to be preferred for early forcing ought to be light, rich, and porous, while the pots ought to be not larger than 5 inches in diameter, well drained, and the soil made rather firm. Allow the plants to advance in growth, enough to fill the balls with roots before putting them into the forcing-house; and should the young crowns be in any degree blanched, by being covered or shaded, shade them partially the succeeding week after being put in to force. When forcing is commenced, the temperature ought not to be above 50° at night, with a slight rise of heat in the day-time, allowing a few degrees more weekly as the plants advance in growth, making 60° the maximum, with moderate ventilation. Water abundantly both by means of the syringe over head and supplies at the root, never once permitting the soil to indicate dryness in the least. Place the plants as close to the glass as available, and turn them round now and then, to prevent the stems getting twisted, which will also materially assist the uniform expansion and colouring of the pips. When their flower-stems are somewhat advanced, secure them by means of inserting stout wires, that have been previously sharpened at the points, into the centre of the bulbs. This insures handsomer plants than when clumsy stakes are stuck in outside the bulbs, and is harmless to the plants also. Plants that are intended for successional blooming need not be put

under glass, but plunged in the usual way out of doors, only putting them under glass some time prior to their being wanted to take the place of the first lot.

The following varieties are to be preferred for early forcing to numerous others that force indifferently: *Homerus*, single pink; *La Preciosa*, single white; *Grand Vainqueur*, single rose pink; *Regulus*, lavender single; *Charles Dickens*, porcelain-blue, single; *Queen of the Netherlands*, white single; *Amie de Cœur*, single brisk rose pink; *Lord Wellington*, soft pink-tinged rose single; *Argus*, single purple, with a large porcelain white centre; *Diebitsch Sabalskansky*, lively pink; *Grandeur à Merveille*, single French white; *Baron Van Tuyll*, single blue; *Madame Hodson*, light pink; and the *Roman*, single white, which ought to be planted by the dozen to afford early effect. Pot the white *Roman* in threes in a pot. Culture for late blooming and exhibition:—It is generally necessary to retard the growth of these bulbs instead of accelerating it; so to accomplish this, better let October be well advanced before taking the roots out of the packing; store them away in a dry, airy, cool place, until then, looking them over occasionally to see that they are keeping sound; but do not delay to plant any that show signs of starting into growth.

The compost to be preferred for late flowers ought to be heavier and richer—two parts firm fresh loam; one part sheep or cow manure, thoroughly decomposed and moderately dry; one part equal portions leaf mould and clean sharp river-sand. Mix these ingredients thoroughly; use clean pots 7 inches wide; if new, steep in water twenty-four hours before using. New pots, without the precaution of steeping, discharge a poisonous element into the soil that is certain death to the roots as soon as they reach it. Cover the drainage with moss, or rotten turf-fibre; allow the bulb to be well sunk into the compost and pot rather firmly than otherwise.

When all are potted have them arranged compactly on a hard bottom, and cover 6 inches deep with coal-ashes, leaf-mould, or other light material. Allow them to remain thus for some weeks, until the pots are filled with roots, and their crowns started, when they ought to be lifted and put into a cold frame without plunging deeper than the rims of their pots, but shading at first, then gradually exposing them to the full light and sun; ventilate freely in open sunny weather, but protect in sharp frost by means of mats. In short, they should be secured from the action of extreme frost; but, at the same time, have the light intercepted by any covering as seldom as possible.

Throughout the winter and spring afford water as is consistent with maintaining vigorous growth, neither keeping them continuously

saturated, nor permitting the soil to get extremely dry. Should the appearance of the plants, as the show-time approaches, indicate their being too far advanced in flower, remove the sashes in the daytime, weather permitting, and only protect the flowers by a canopy of hexagon net or screen. Should the reverse be the case—namely, the flowers too late—the frames must be kept closer; or else, which is preferable, the plants put into a greenhouse near to the glass, where all the necessary requirements, such as tying, stacking, and dressing can be performed without exposing them to the wind.

As the flowers approach opening it is well to supply the roots with weak liquid manure as a stimulant to growth, which acts at once with good effect upon the pips, expanding them to greater dimensions, as well as displaying in them higher colours than if only fed by water.

Dressing the flower-spikes.—Whether for exhibition purposes or not the appearance of some hyacinths may be very much improved by having their pips thinned and arranged neatly. The doubles are mostly improved by this, as in many instances their pips are so heavy that they hang slovenly, showing their outline to disadvantage. In proceeding to arrange a spike, the wire support or stake ought to be brought neatly up amongst the pips without disarranging any of them. The top of the wire should only reach the upper extremity of the foot-stalk of the topmost pip. When it is placed erect the pip is tied in this position, and the main stem is also tied securely to the wire support; then the set of pips immediately below the crowning one is raised up and secured in position by means of the crowning pip overlapping their margins; the next series of pips are in their turn raised, so that the one above them overlaps them and supports them in position, and so on; one series of pips is made to support that below it, until all are secured, making a symmetrical whole when completed. Another mode of securing the uppermost series of pips in position is to insert pieces of fine steel wire into the centre of each flower, securing the wire in the main stem, then hanging all the lower flowers to one another.

LIST OF EXHIBITION SORTS.

Double Blues.—Laurens Koster, Indigo, Lord Wellington, porcelain shades; Van Speyk, pale blue.

Doubles of the Redsto Crimson shades.—Koh-y-Noor, rich pink; Lord Wellington, delicate blush; Susanna Maria, salmon rose; La Tour d'Auvergne, double pure white.

Single Blues of various shades.—Argus, bright blue, white eye; Auriculus Oog, purple violet, white eye; Baron Van Tuyll, dark; Charles Dickens, delicate pale blue; General Havelock, dark purple; Grand Lilas, azure blue; Haydn, mauve; King of the Blues, deep blue; Lord Melville, deep blue; Marie, deep purplish-blue, striped indigo; Prince Albert, black, with a glow of purple.

Single Red, Rose and Crimson.—Cosmos, rose pink; Emmeline, delicate pink; Garibaldi, rich red, immense spike; Lina, rich crimson; Macaulay, deep rose, striped crimson; Mrs Beecher Stowe, dark rose pink; Norma, waxy pink, immense pips; Prima Donna, shining rose; Princess Clotilde, pink, striped carmine; Rouge Pyramide, rich red; Solfaterre, beautiful orange scarlet; Von Schiller, salmon pink.

Single White and Blush.—Alba Maxima, pure white; Baron Van Tuyl, pure white; Grandeur à Merveille, delicate blush; Mont Blanc, pure white; Seraphine, blush snow-ball, pure white, without dispute the most perfect pip, and massive above all others.

¹ *Single Yellow.*—Duc de Malakoff, straw striped; Rose and Ida, primrose yellow, the finest of this section.

A. KERR.

THE GRAPE VINE.

WITH two exceptions the Grape Vine (*Vitis vinifera*) is the earliest fruit-bearing plant of which there is any record. From earliest ages it has occupied a prominent and very important position amongst the fruits of the earth. There is strong presumptive evidence that it was cultivated by the antediluvians; and it is specially referred to as having occupied the attention of Noah as soon as the waters of the flood had subsided from the face of the earth. When Moses sent the heads of the children of Israel to spy the land of Canaan, and to bring back word whether it was "fat or lean," they brought back an example of the Grape to prove that it was worthy of their promised possession. Through the long ages that have lapsed since then, with their ever-varying tastes and habits, the luscious Grape has been an important product of cultivation; and it has lost none of its early popularity. At the present time it is more extensively cultivated under glass than ever it was at any period of the world's history; and in this country hot house Grapes are now an article of commerce to a much greater extent than ever they were, with every likelihood of their becoming increasingly important. It is much to be regretted that a destructive parasite (*Phylloxera vastatrix*) is threatening to become a formidable destroyer of the Vine, both in the vineyards of the Continent and in the vineries of Britain. It is to be hoped it will be successfully "stamped out" where it has appeared, and that the prestige of the Grape Vine may not be tarnished.

It must be regarded as somewhat strange that the native country of the Grape Vine has not been definitely settled by botanists. It can be safely assumed that it is indigenous to a great part of Asia, the climate of which is suited to its growth. From Asia it was no doubt introduced into Egypt and Greece, and from these parts found its way into France, Spain, and other Continental countries, where it has so long held a position of much importance. It is supposed that its

cultivation in France dates as far back as the second century. Its introduction into Britain has been attributed to the Phœnicians, as early as the days of Solomon, when trading for tin to the southern coast of England; others ascribe its entrance into this country to a short time after the Christian era, when the Romans had full possession of the country.

There is no doubt that it was at one time cultivated in the south of England for wine-making with very considerable success. It is authentically recorded that at Arundel Castle, in Sussex, great quantities of wine were made from the produce of a vineyard there, and that in 1763 there were 70 pipes of wine in the castle cellars, all produced from Grapes grown in the Arundel vineyard. The first mention of artificial heat being applied to the Vine is in 1718, when the Duke of Rutland, at Belvoir Castle, forced it by means of heated walls. In Switzer's 'Practical Fruit Grower' there is to be found the first plan of a vinery, with directions for forcing Grapes under glass. As a branch of horticulture Grape-growing under glass has certainly more than kept pace with any other, both in its general diffusion and its improvement, until it may be looked upon as of national importance.

SITE FOR VINERIES.

There are two extremes of circumstances which are inimical to the most successful culture of the Grape Vine, and these are considerably dependent on the site where vineries are erected. A low damp position, into which the water in its immediate vicinity finds its way, and from which it cannot be drained to the depth of at least 3 feet, should be avoided; for stagnant water is ruinous to Vines, and such a site may be regarded as the very worst. An elevated, excessively dry site, with a gravelly subsoil which suffers very soon and severely from drought, should also be avoided if possible, as excessive drought is also very unfavourable to the production of fine Grapes. A site sloping gently to the south, from which water can be effectually drained, is the best, and should always be chosen when available. Shelter from north and east winds is also of importance. But the sheltering objects should never be so near the vinery as to prove injurious by their shade. When Vine-borders have from necessity to be made near large growing trees, an effectual barrier—such as a brick and cement wall—should be provided against the inroads of the tree-roots.

VINERY FOR EARLY FORCING.

What I intend to be understood by the term "early forcing," is that which produces ripe Grapes in March, April, and May, and which necessitates the commencement of forcing in October, November, and

December respectively. The forcing thus extends over a period during

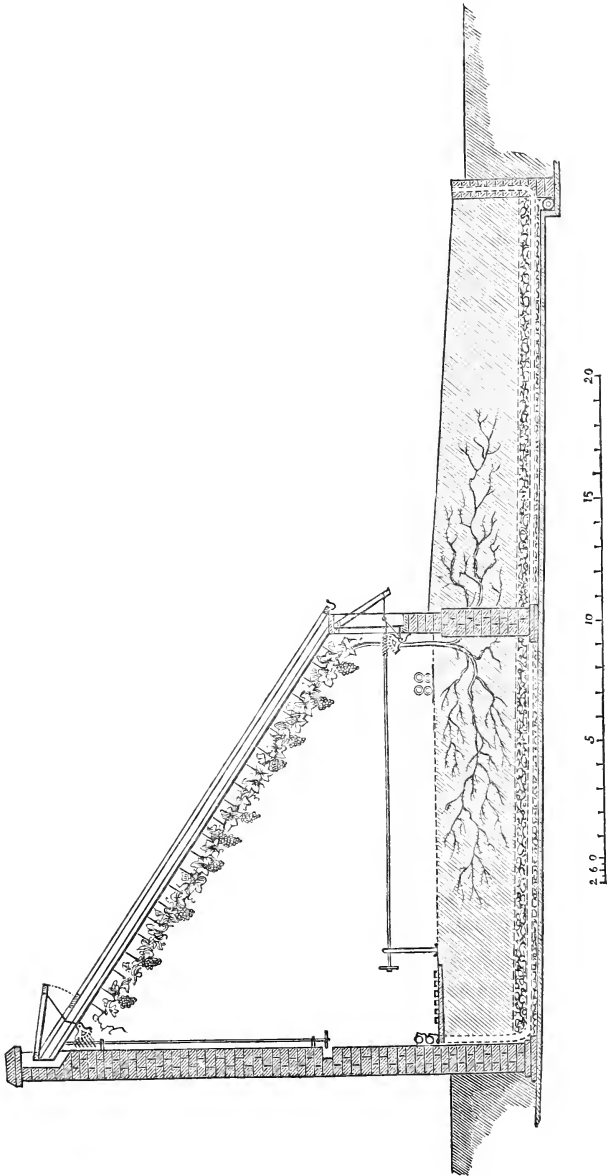


FIG. 16.

which the days are short, sunless, and cold—conditions which, it need scarcely be said, are adverse to vegetation of every kind. Even the

most ignorant of the art of forcing through such a season will at once conclude that the production of good Grapes in early spring, in this ever-changing climate, must be one of the most difficult tasks of the horticulturist. Whatever structure it is that insures the greatest possible amount of light, and is at the same time the most easily heated to and maintained at the necessary temperature, must of necessity be the best for early forcing. Very little consideration will serve to convince any one that the form of vinery which presents almost its entire surface of glass to the south, so as to catch every gleam of sunshine, must be the best.

The "lean-to" as represented by fig. 6 is beyond all doubt the best for early forcing. Indeed it is a good form for producing Grapes at any season of the year, but especially at the time now under consideration. The wood-work should not be any heavier than gives sufficient strength, and it should be glazed in large panes with 22-ounce British sheet-glass. The amount of pipes for heating it should not be less than six rows of 4-inch pipes the whole length of the house and round both ends, besides a steaming-tray. The whole of the inside wood-work and back wall should be white, so as to reflect as much light as possible on the tender growths of the Vine. Reference to the engraving shows the arrangement of the drainage and depth of soil as referred to under the head of "Border-making."

In forcing that has to commence in any of the winter months, there can be no doubt that artificial heat judiciously applied by hot-water pipes to the soil from beneath is a great advantage. In arranging for this the pipes should be immediately over the concrete, and covered over in a shallow chamber by pavement, and the drainage placed over the pavement; or the pipes may be surrounded with an open or honey-combed brickwork drain, which drain can be connected with similar open drains running right and left among the open rubble, of which the drainage is composed. A border 24 feet wide should have four rows of hot-water pipes running underneath it.

The ventilation, especially of vineries where early forcing is carried on, is of very great importance. For it is, especially in those days of large panes of glass and close laps, of great importance to keep the air fresh, and constantly renewed. The ingress of cold currents of air is most objectionable. It is of much importance to heat it before it enters the body of the vinery and plays on the tender foliage and fruit. Many ways have been recommended to effect this end; but the best way is that invented by William Thomson, and illustrated by him in his 'Treatise on the Vine.'* It is termed the "hot-air ventilator,"

* All who require the best and most elaborate information bearing on everything connected with Grape-growing, should read Mr Thomson's 'Practical

and consists of a sheath of "copper placed over or incasing a row of the front pipes. The diameter of the sheath is one inch more than the hot pipe it encloses, consequently there is an open space of half an inch all round the pipe inside the sheath. This cavity is fed with fresh air from the exterior of the house, by a pipe 5 inches in diameter, which springs from the lower surface of the sheath and passes through the front wall of the house to the external air. There is a valve in this feed-pipe to modify the supply of fresh air at pleasure. In the upper surface of the sheath is a double row of holes, so that the moment the cold air comes into the chamber round the pipe and gets hot, expanded, and lighter, it makes its exit through these holes into the general atmosphere of the house."



SEAKALE: SEEDLINGS.

I HAVE no hesitation in saying that, under ordinary circumstances, there is no necessity whatever for growing Seakale two years before forcing; it is labour lost. Plants grown from chopped roots make a lot of spray which has to be regularly thinned out, and during the growing season the crowns left have to be watched, and the seed-stems removed when they appear, which further induces the plants to make lateral growths, which have again to be thinned out in their turn, and in the end, though perhaps two or three good crowns will be secured to each plant, they will be no better than seedlings of one year's growth. I say this after having adhered to the seedling plan, and no other, for nine years. We never have a successional quarter of Seakale; we cannot afford the room, but force a whole quarter of seedling plants every year. Without extraordinary culture, we have had plants from seed more than 5 feet across by October. At this date, Sept. 15, we have them above 4 feet, generally, with robust crowns, and roots like Carrots, seed-plants which will throw heads, when they come to be forced, that ought to satisfy any one. Before long, gardeners will be planning their crops for another year; I should therefore advise them to go in for the seedling plan without fear—for very many yet stick to the dibbling process—and they will save both time and space. Our Seakale quarter is not always trenched, but just as often only dug; generally following Potatoes or Celery. To guard against failure of a

Treatise on the Vine,' now in its seventh edition. And I may further add, that I consider anything that I can say, in the light of such a work, to be, in a certain sense, a work of supererogation; only, writing a work on Fruit Culture under Glass, I could not, of course, omit the Vine—it would be like the play of Hamlet with Hamlet omitted.

crop, which is the only risk by seed, it is worth while to red-lead the seeds and to sow thick. The first will effectually stop all depredations from vermin, and thick sowing will insure a crop. It is soon enough to sow by the end of March or beginning of April. On one occasion, and the only one on which he had to sow twice, the seed was put in about the 10th of June; and with a little coaxing we had plants fit for forcing by the end of the season. Some of the best seed we ever used was gathered from wild plants on the coast of Wales. The seeds were small, but the plants turned out as usual. J. S.

AN INSECTICIDAL PAPER.

GARDENERS have often things of a very vexatious stamp to deal with, not the least of which is to be found in the various insects which infest our plants and trees. Wherever there are plants grown, even in the best-kept gardens, there insects will sometimes be found; and though every one wishful of being completely successful in the cultivation of either fruits, flowers, or vegetables, tries to keep them free from these pests, yet in by far too many instances it is extremely difficult to keep them under at all seasons, especially during the spring and summer months, when, if the working staff fits the requirements of the place very tightly, as it too often does, the insects have it pretty much to themselves just then. It is very trying, even to the magnanimous temper which gardeners ought to be possessed of, to have the objects of one's care to a greater or less extent marred in beauty and hurt in health by the attacks of insects. Partly, we suppose, on that account, and partly for the sake of filthy lucre, which notwithstanding is a very handy article, there are various "insecticides" manufactured and sold, having, according to the vendor's way of thinking, properties of the most destructive character to all kinds of insect-life peculiar to the inmates of our gardens. From experience, we know some of these insecticides fulfil the promises made for them by their inventors; but to use them even on what could not be named a large scale, comes to be very expensive: and so gardeners continue in the old ways of patiently brushing and sponging off the mealy bugs and "scale" in variety, infesters of the inmates of their green-houses and stores, destroying others with the essential poisons found in tobacco, the effects of which, on the portion of the human family which uses it, is said to be seen in a degeneracy of muscle, and other evils to which flesh is *not* heir to. The fumes of sulphur are called into request for the extermination of other vermin; whilst in some instances they are individually stamped out by the unaided use of the hand. Boiling water is, so far as we know, certain death to all kinds of animal life: even the *Trichina*, which our Continental Teuton brethren swallowed with their pork, had to succumb to the power of this agent. Acting on this fact, some have used water sufficiently hot to destroy insect life, though harmless to the plants infested, with the greatest success. We have had occasion to use it in a somewhat extensive manner lately for the destruction of scale and bug on stove and greenhouse plants, and so satisfactory have the results proved to us, that we cannot forbear mentioning it as an inducement to brother gardeners to try it for themselves. From experience, we knew soft soap and hot water to do its work as a plant-cleanser well and quickly; so we had no fear of the results. A

change of situation in the end of last year brought us into contact with plants and fruit-trees on which the insects just now in question were pasturing in any number. The Camellias, some of large size, and planted out in the conservatory, were being sponged with cold water when we took possession. In a wonderfully short space of time they were as dirty as ever; and by the time they were flowering their best, the leaves were black with smut. Directly the flowering was over, operations were commenced by syringing them thoroughly and forcibly with soap and water, so hot that it was painful to hold the syringe with the naked hand. Most of the trees were also sponged with the same solution as hot as possible, and again syringed with it, and afterwards with cold water, leaving every leaf clean and shining. Two of the largest we were obliged, through press of work, to let go without the sponging. Though the insects were as effectually cleared off these as off the others, the whole of the dirt could not be induced to peel off the leaves, though a good deal of it did. In June a new colony of them simultaneously took possession of the trees, and the first wet morning all hands were set to work, the same sort of reception being given to them as to their predecessors. The whole of the trees were sponged as before, and all through the summer have been very thoroughly washed with cold water, applied at a strong pressure. Only one scale has been found since. They are now, September 3, being subjected to a hot-water syringing and sponging as before, which we hope will see them into next summer without needing more. Far from the hot water harming them, they have made a strong growth, and in some cases the flower-buds will have to be thinned very considerably. The same treatment will be found equally successful to clean such plants as *Ixoras*, *Crotons*, *Oranges*, *Stephanotis*, *Gardenias*, *Francisceas*, &c. In a case of Cucumbers, which got infested with mealy bug, by syringing weekly with soap and water at 110° to 120° we exterminated them without in the slightest degree hurting either the foliage or fruits. Through circumstances over which we had no control, the inmates of our second vinery got colonised with red-spider from one end of the house to the other. Though it appeared rather a formidable job to wash every leaf in a house over 30 feet in length, still something had to be done, and washed they were with the soft soap and water as hot as could be used. At the end of two days every leaf was free from the destructive pest without effecting the least noticeable injury. The precaution of sulphuring the pipes was also taken, and prevented the re-appearance of the enemy. Occasionally filling vineries with the fumes of sulphur is a sure preventive to red-spider, if everything else in the way of precaution and good cultivation is followed; but if once the spider gains a footing, the best and quickest plan is to sponge all leaves on which the spiders are, at the same time sulphuring the pipes. It is possible to get rid of them by sulphur alone; but to effect this it must be applied at a strength that will damage the younger leaves. Thrips are another family which are troublesome to get rid of. It is well, on the slightest appearance—even if but one is seen—to fumigate immediately, repeating it three or four times in a fortnight, filling the house slowly and as full as possible. “The Squire’s Gardener” some years ago advised using the nail of the thumb to catch them as a means of keeping a winter Cucumber free from them. Acting on the hint, we have repeatedly used the point of a knife wetted with which to catch them; we got over them quicker than with the thumb-nail. Taken as a whole, Ferns are a class of plants requiring more time and care to keep clean than any other. Owing to the delicacy of their structure, such rough measures cannot be resorted to as in the case of other plants. *Gymnogrammas* and *Nothoclœnas* go scot-free from all

sorts of insects. Some of the *Adiantums* are but slightly troubled with them, but the generality of this order of *Cryptogams* require constant watching to keep them clean. Where Ferns have got badly infested with scale, it is the best plan to cut them over close to the soil and let them start afresh—keeping a sharp look-out, meanwhile, that they do not again effect a footing. That beautiful Fern *Pteris tricolor* is seldom seen in good condition, though it is not a difficult one to cultivate, solely because of the damage done to it by scale. The *Pteris* family are very subject to insects, and the only means of doing them well is to keep a constant eye to them: moving those which it is not possible to keep clean to a lower temperature makes a great difference. *Lomaria gibba* and its varieties suffer much from Thrip if grown in too high a temperature. Young plants of the normal variety are fine for room-decoration. We find them do well in a cold frame, shaded during the summer season. Greenfly sometimes attacks *Adiantums* of the *cuneatum* section. A dusting of snuff or tobacco-powder, which is quite as effective, and much cheaper than snuff, is the best means of getting rid of these. These do not stand fumigating except when they are comparatively at rest, when a slight doze will not harm them.

We have seen much labour expended on fruit-trees to clear them of scale. The Peach and Plum trees here were in places completely covered with them: we had the affected parts painted with linseed-oil, by which they have been cleaned. In the 'Handy-Book of Fruit Culture under Glass' water at a temperature of 160° is shown to entirely rid the trees of these insects. The same means will insure the destruction of American Blight. Hot water is also destructive to ants; it may be used hot enough to kill the vermin without hurting the roots of plants. The same means may be resorted to to kill woodlice—a vermin which is classed as the Gardener's friend in 'Our Garden Friends and Foes,' though quite erroneously. Mice sometimes get troublesome; where a cat is objected to there is nothing like poisoning them. Phosphor-paste will be found excellent for destroying all sorts of vermin as well as these. Worms often prove mischievous to the gardener; lime sprinkled on the surface either of lawns, walks, or pots, and then watered, or dissolved in the water and then applied, is equally effective. It is not safe to apply lime to all sorts of plant. Then there are caterpillars, which devour the leaves of our Gooseberries, eat up breadths of Cabbages wholesale, or prey on the foliage of our tender plants: hand-picking, when once they are there, is as effective as any plan; but prevention to a considerable extent may be secured by keeping the ground constantly stirred amongst the bush-fruit and green crops in the winter, renewing the soil on the surface where the Gooseberries are grown, and burying that taken off deeply between the rows. Slugs may be kept down by a free use of the hoe, and keeping everything in the shape of withered leaves and decaying matter clear away from all crops and flowers. Then there are the various flies which attack Turnips, Cabbages, &c., and which may be destroyed most effectually by wetting the plants and then dredging with dry sand.

The very best way of keeping crops and plants free from insects and vermin is by high cultivation and continually watching for the first trace of the enemy, then using speedy means of extermination.

We hope that amongst the number of your readers who may favour us by reading our imperfect "paper" may be found some one who could put us on to a plan by which we could clear the kitchen-garden here of wireworm: means have been tried, but without success. We can only keep summer-planted Cauliflowers and so forth from "clubbing" by refraining from planting them at all.

R. P. B.

NEGLECTED DECORATIVE PLANTS WORTH GROWING.

IN our eagerness to obtain new and rare plants, we are often apt to overlook older ones of infinitely more real and practical utility to the gardener for greenhouse, stove, or conservatory decoration. In this paper I shall enumerate a few of these, and add such remarks as may be useful either in their culture or propagation.

Cantua dependens.—This is a fine plant for a pillar in the greenhouse or cool conservatory, flowering very freely when in a healthy state. It may be propagated from cuttings, and grows best in a compost of turfy loam, peat, and sand, while a little leaf-mould may be added with advantage. It bears drooping clusters of crimson or magenta coloured flowers, which are tubular, each being about 3 inches in length. When well flowered, the plant is highly effective, and its flowers are well adapted for cutting. It flowers well out of doors in Devon, but the cool conservatory is its proper place. When growing, syringe freely, as it is apt to become infested with red-spider.

Centropogon Lucyanus.—Grown in 48-sized pots, this makes a nice little decorative plant, being bushy in habit and only about 1 foot in height. It bears rosy tubular flowers on the ends of the shoots, and these are very freely borne on healthy specimens. Plants may be obtained in any quantity by inserting cuttings in the spring or summer, which strike easily in a genial bottom-heat. It is specially valuable as flowering during the winter or early spring months. It may either be grown in a warm greenhouse or in the stove.

Hæmanthus magnificus.—All the plants in this genus are bulbous, and many of them produce dense heads of dingy inconspicuous flowers. The present species is, however, a noble exception, and bears a large globular head of scarlet star-like flowers on a scape which varies from 1 foot to 18 inches high. It is one of the most effective plants for a warm greenhouse, and ought to become as popular as it is beautiful. It is now in flower, and grows well in sandy loam on a well-drained bottom.

Jasminum grandiflorum.—This is grown by Mr A. F. Barron in the Royal Horticultural Gardens at Chiswick, and found extremely useful either as a pot-plant, or it furnishes nice sprays of its white Bouvardia-like flowers for cutting during winter and spring. It can be readily increased by cuttings; and these, potted in loam, leaf-mould, and sand, soon form nice flowering plants. It may be pinched, and then has a dwarf bushy habit. Its pure-white, delicately-perfumed flowers are very acceptable for bouquets or dinner-table decorations.

Myoporum album.—This plant does not appear to be grown very extensively in this country, though there can be but one opinion as to

its usefulness as a pot-plant for summer and autumn decoration. I never met with it until a week or two ago, when I saw it in the Parisian flower-markets, and also as grown by the French florists, who give it an excellent character for its elegant habit, free-flowering qualities, and durability. It grows freely in any common garden soil, though loam and leaf-mould are preferable, forming a dense bush about 15 inches high. Its flowering branches droop gracefully nearly to the pot-tops, and the white flowers somewhat resemble those of a small-flowered *Eriostemon scabrum*. Branches broken off and thrown on damp sand or soil root freely, and go on flowering in a very unceremonious manner; or it can be raised from seed, which is freely produced.

Nerine Fothergillii.—Doubtless many know this beautiful old bulbous plant; but it is rarely met with nevertheless. When well grown, it flowers profusely, bearing heads of scarlet or crimson flowers 3 or 4 inches in diameter on scapes a foot or more in height. It grows well in a greenhouse, all the attention it requires being re-potting once a-year and a liberal supply of water when growing—a season, by the by, when it is too often thrown under the stage and neglected. The great secret in growing all bulbous plants to perfection is to grow them liberally, and thus induce them to develop their foliage, which in its turn supplies nutriment to the bulbs for the next season's flowering.

Oncidium obryzatum.—This free-flowering Orchid seems very local in its distribution, although it deserves general cultivation, being one of the easiest to grow in the whole family. Its great spikes of golden-yellow, sweet-scented flowers are produced during the winter and spring, and being very freely branched, furnish elegant sprays for cutting. The plant grows well in fibrous peat and sphagnum moss, in a moderately warm and humid atmosphere. *Oncidium flexuosum* is another well-known and easily-grown species that flowers freely under the same treatment; and if the equally well-known *Dendrobium nobile* be added, we have a trio of the best Orchids for a quantity of cut Orchid blooms during the winter and spring months. All may be grown in an ordinary plant-stove.

Sparmannia Africana.—This old plant is rarely met with, but when grown in small pots is useful for winter and spring decoration. It strikes freely from cuttings in the early spring; and these, grown on in a moderate temperature during the summer, will flower profusely the following spring. It bears great trusses of white-petalled flowers, the cluster of anthers in the centre being crimson and yellow. It is a nice addition to greenhouse decorative plants, and interesting as a *souvenir* of Captain Cook's second voyage round the world.

Thyrsicanthus abutilans.—Happily this plant is more commonly grown than some of those mentioned above; still it is in a great measure neglected. It is rather lanky in habit, but I have found it useful during the winter season as a table-plant; and it furnishes elegant racemes of its bright red or crimson flowers for the drawing-room vase. Old plants cut down after flowering furnish plenty of cuttings; and these, if struck in a genial bottom-heat and grown on liberally through the summer, make nice little decorative plants from 15 to 18 inches high the following winter and spring. They should be grown in small pots, and fully exposed on a shelf near the glass, so as to keep them as compact as possible. The old plants break freely after being cut down, and may be grown on again the second year for stronger specimens. If about three old plants be cut back, and placed in a 32-sized pot, and grown near the glass, with occasional dozes of liquid manure, a nice specimen may be formed. Frequent syringings may be desirable to prevent the ravages of thrips or red-spider.

F. W. B.

NEW AND SELECT FLORIST FLOWERS.

PHLOXES.

THE excellence of these as garden ornaments induces me to notice a short list, which I consider well worthy the notice of those who have a spare corner that wants brightening up. I do not say too much when I remark, if many gardeners saw a collection in bloom as good as the one this selection is taken from, they would go into raptures about them, and be quite excusable. Lady Napier (early), white, immense size of pip, solid glossy texture, of perfect form, spike large and compact; habit dwarfish, with beautiful full shining leaves; the finest white extant. Snowflake (early), pure white; also fine. Roi des Blanc (late); only second to Lady Napier, taking all qualities into account, but wants nothing of being second. George Wilson (early), white, with rose-purple eye, magnificent spike, dwarf, closely covered with handsome foliage. Mrs Baillie (early), white, suffused pink, bright rose eye, dwarf and fine. Mrs Liddle in a great measure resembles Mrs Baillie, but is less dense in the shade of the eye. Mrs Thom also seems closely related to the foregoing two, but carries the bell for a spike. Wm. Blair, rose-purple crimson eye, a magnificent spike of surprisingly fine pips. The Shah (early), colour dark rose-purple, with a fainter shade over the brow, eye deeper rose-purple, with an expansion of flower more than equal to cover a crown piece; spike extra large; habit dwarf, splendid. John Baily, flowers beau-

tiful, brisk light rose, stamped with a deeper rose-purple around the eye; habit dwarf. George Goodal, colour dark rose-purple, with a large clear purple eye, large perfect formed flowers and massive spike. Mrs Austin, French white, with delicate but distinct touches of purple around the eye; very telling. Marquis of Lorn, cream white, with brisk rose eye, large spike, splendid. The Queen, white, showing delicate tracings of faint purple; a fine old variety, very distinct. The following late sorts are taken from a brilliant assortment grown in pots; they are most diversified in colour, ranging between dark purple and white:—Rosy Morn, dark; the Shah, dark; Lady Middleton, light; Lothair, dark; Mons. le Baron Deiffe, dark; Roi des Blancs, white; Madame Marie Saison, light; Mons. Henricq, one of the most lovely and telling, giving light and effect to all other Phloxes it is in contrast to, colour rose madder, with a faint maroon eye, enormous spike; Princess Louisa, light; Memnon, dark; Emblem, light; John Standish, light; Mons. Edward, dark; Roi des Roses, dark; Madame Andry, dark; Delicatum, light; Mons. Malet, dark; Edith, light.

NEW PANSIES.—FANCIES.

This section of the Pansy is fast rising in public favour, indeed threatening to supersede the much-esteemed "Show" division. The "Fancy," though less refined to the eye of a connoisseur than the Show, has two qualifications which are of much importance. These are, superior vigour of growth, and the wonderful splendour and wide range of colours which they embrace. In regard to "finish," of late years this is very much improved. For example, compare the new Fancy, called John B. Downie, and it will be seen that it closely approaches the criterion by which Pansies are judged. Mrs B. Brooks, a large flat expansive flower, with a proportionable great blotch of black, glossed by crimson purple, which gloss extends over the lower portion of its sulphur edge; upper portion washed with bronze crimson and purple, which commingle, and leave a clear border margin of pale sulphur, eye yellow, small, of nice uniformity. Picotee,—this is the greatest novelty of the season, which is borne out when considering its tracings, which proceed from the blotch unbroken to the verge, forming a rare network delightful to look at; blotch large, uniform, colour rich indigo blue, bordered with sulphur, thickly overspread with dark veins, edged with a neat lacing of deep purple, eye clear orange, feathered neatly, size much above the average, surface smooth, solid, and glossy. Mrs Hunter, yellow ground of superior merit, blotch shining, brownish black on the wing petals, which changes to a shade lighter of same colour on the under petal, which show clear veins of maroon, eye large, orange margin brilliant yellow, broken

with bronze yellow, and spots of mauve. Mrs Neilson has been honoured with 5 first-class certificates, and is generally considered the most beautiful of the Fancies. The blotch is brilliant violet-purple, veined regularly with deep indigo, encircled with a broad margin band of French white, unbroken all round the flower; eye clear yellow, and conspicuous on the upper division of the flower are deep markings of shining purple. Stephen Nairn, ground imperial yellow, blotch shining velvety black, eye yellow, margin bronze dashes, with golden bronze. Richard Deans, a massive flower, ground chrome yellow, blotch dark maroon, velvety upper petal clouded with rich mahogany, fine. Thomas Granger, a beautifully finished flower of the rich wallflower-brown type; blotch intense glossy-black, eye yellow, bound by a belt of deep Indian red, tinged faintly with bronze, under petal furnished with a thread lacing of bright yellow, fine substance, extra. Mrs Bullen is furnished with an extra large blotch, which nearly covers the lower petals. Colour indigo, blending to black towards the centre, with lighter rays adjoining the margin; upper petals splashed purple on a sulphur ground, while the entire petal is encompassed by a band of rich yellow. Mrs M'Nee: this worthy flower of the white ground type exhibits a large blotch of glossy dark blue, changing to black near the eye, which latter is yellow, of small dimensions, beautifully exact in form, and without radiating streaks. The upper portion is furnished with markings of violet purple, surrounded by a margin belt of white, which extends over the undermost petals also; texture solid and polished. A large bold circular flower without a wrinkle.

A. KERR.



STREPTACARPUS BIFLORA.

THE *Streptacarpus biflora* is one of the prettiest and most useful plants we have. The flower, which resembles the *Gloxinia*, is much prettier, although not affording such a variety of colour. It is far more useful than *Gloxinia*, for it remains in constant bloom all the year round, and is just the plant to suit amateurs, for it can be easily grown, and well repays the attention it requires with a profusion of flowers. It can be easily propagated either from leaves or by division. If a quantity of leaves are put in a compost of peat, loam, leaf-mould, and sand in January, and placed in a little bottom-heat, they will soon strike root. They should then be potted off into 72-sized pots and placed in a warm greenhouse or intermediate house, where they will make rapid growth. When they have filled the pots with roots, they should be shifted into large 60's, using the same compost as before, only adding a little cow-dung or mushroom-dung. When they

have filled those pots with roots they may be allowed to bloom. If they require another shift, it will not harm them to do so when in bloom; for I have frequently shifted them when in full bloom and have not seen the least bad effects from so doing. I am sure, if any one that has not got this plant will procure it, it will give them entire satisfaction.

G. WARREN.

BALCOMBE PLACE.



PROPAGATING LOBELIA AND CENTAUREA RAGUSINA.

IN the September number of the 'Gardener,' my attention was drawn to an article by J. S. on the propagation of Lobelias and Centaureas. I quite agree with J. S. so far as regards the propagation of Lobelias from cuttings being more convenient than raising the plants from seed. I have myself practised that system for several years now, and have found it not only more convenient, in relation to time and labour, but much more satisfactory in its results. The plants from cuttings have a decided advantage in the flower-garden, there being more perfect uniformity both in colour and habit, and not having the coarse growth of seedling plants, which gives better effect in the bloom of the cuttings. My plan is to strike a few cuttings in autumn, taken from the *best* plants, and these cuttings constitute the *stock* plants. The system is to strike in saucers with sand and water, placed on bottom-heat: two or three days is sufficient to have them ready for potting off; but I prefer boxes, as they take less space and are more convenient for moving about. After potting off, they are placed in heat for a few days till growth has commenced, when they are gradually hardened off. In spring the plants are cut over, and the cuttings treated again in the same way. Hundreds of thousands may be got up in two or three weeks in this manner, as scarcely a cutting fails to strike root.

In regard to propagating Centaureas by cuttings, the same method may be followed with perfect success; in fact, mostly all of our soft-wooded bedding-plants can be struck in sand and water. I have tried it successfully with some of our most delicate Geraniums, such as Mrs Pollock, &c. It only requires judgment in the amount of water to be kept in the saucers, as some plants will stand more than others. It is the simplest and most effectual means of propagating Fuchsias, Verbenas, Heliotropes, Iresines, and all plants of the soft-wooded kinds.

ROBT. STEVENS.

PASTON, NORTHUMBERLAND.

TRICHINUM MANGLESII.

THOUGH known to botanists fully twenty years before, it is only some eight or ten years ago since, if our memory serves us right, Mr Thompson of Ipswich was fortunate enough to raise plants of this lovely Amaranthaceous perennial from seeds he had sent him from the Swan River.

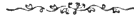
The advent of the "interesting little stranger" created a considerable sensation at the time, and very soon thereafter it was to be found pretty freely scattered over the country. From some cause, however, to us inexplicable, certainly neither from its lack of beauty or facility of culture, it seems to have fallen into neglect, and is now rarely to be met with. With a view to rescue this plant from what we believe to be unmerited oblivion, we have conceived the idea of penning these few lines, fully convinced that by-and-by those of the readers of the 'Gardener' who can appreciate a really good flower will be constrained, if they could but penetrate our *nom de plume*, to thank us personally for reminding them of, or introducing them to, one of the greatest gems of recent years.

To those who do not know the plant in question, it may be interesting to say that it requires greenhouse treatment—that is, it will not stand frost—and that it forms at first a tuft of radical leaves of a form which botanists call oblong spathulate; they have long foot-stalks, and are of a dark shiny-green colour; from among these the flower-stems shoot up to heights of from 6 to 9 inches, sometimes, if the root is strong and vigorous, a few inches higher. They are generally branched, and each branch terminates in an oblong spike, consisting of a mass of pink-coloured bracts clothed most profusely with long silvery hairs, from amongst which the beautiful satiny rosy-purple flowers are produced. It is difficult to imagine a more striking or effective plant when well grown and in full flower.

As far as culture is concerned, the *modus operandi* is simple in the extreme, and may be briefly stated as follows: The plants, whether obtained from division of the roots, an operation which can be safely done about April, or from seed, which should be sown in a pan in the summer of the previous year, should be shifted in spring into 4 or 5 inch pots, according to the strength of the roots, using a compost of one-third well-decomposed leaf-mould, two-thirds rich fibry loam, with plenty of sharp sand to render it moderately porous, the whole thoroughly mixed up and incorporated, and used in a dry state. After potting, they should be kept in a cold frame or greenhouse near the glass till there is no possible danger of frost, and afterwards be fully exposed for the remainder of the summer in a warm sunny place out of

doors, finally transferring them to the greenhouse about August, by which time they will be showing flowers and will continue in perfection for six weeks at least, charming all who have the good fortune to see them possessing a taste able to appreciate anything above mediocrity.

OMEGA.



TWEED VINEYARD.

BOOKING at the Victoria Station, Manchester, for Galashiels, after "doing" the International, a six hours' ride brought us into the immediate vicinity of the valley of the Tweed, classic through the prose and rhyme of the past and celebrated by the enterprise of the present day. Who has not heard of ancient Melrose and its picturesque neighbourhood, with all their inspiring reminiscences of Sir Walter Scott and other Border worthies? and who has not heard of the modern Tweed Vineyard with its unparalleled Graperies and Pineries, situated three miles from Galashiels in a somewhat outlandish-like quarter of this classic region? Two minutes' walk from Clovenfords station stands the hospitable dwelling of Mr Thomson, which we pass through by the conservatory, gay with the finest of Mr Pearson's seedling Geraniums, which Mr Thomson thinks highly of, and proceed to the vinery corridor. Before, however, noticing the crops, I will give a brief outline of this block of structures. The corridor is a span-roofed house 148 feet in length and 26 feet in width, with 4 feet of an upright sash and 18 feet of a rafter. From this corridor, and running at a right angle with it, other three span-roofed houses of the same construction are entered, one running into each end, and one in the centre, 200 feet long each, and 24 feet wide. All the ventilation of these is worked from the corridor. The top is lifted up by means of one of Baird's patent wheels and screw. The front sashes are hung in the centre, attached to a rod with bars, and worked by a simple arrangement of wheels from the end. The whole are supported on strong stone blocks with openings between, giving the roots free access to the outside borders, a space of 30 feet, which is not yet fully made up—an addition of 2 feet being applied yearly. 4600 feet of 4-inch piping is arranged in these four houses. This quantity at first was worked entirely by one boiler 18 feet long, in shape like one of the old Cornish tubular boilers, having a skin of water 2 inches thick all round the fire, which is in the centre of the tube. In case of accident another smaller one of the same form was subsequently attached, and is now worked when required. Returning to the crops, and starting with the corridor, the Vines in this house as well as in all the others, are planted in what may be termed double rows, a row of permanent ones being placed in the space between the front sashes and the hot-water pipes; another row of supernumeraries is temporarily planted on the other side of the pipes. One side is wholly planted with Duke of Buccleuch; each stem has two rods trained in the form of the letter V. The others are Black Hamburgs, Duchess of Buccleuch, Grizzly, and White Frontignans, Royal Muscadines, Madresfield Court, and a number of Golden Champion. The few still hanging of this latter variety were splendid; great berries, some of which I saw placed on the scales, weighing $\frac{3}{4}$ oz. each, and perfectly free from spot. This house is the earliest, coming in about the beginning of July, when the fruit is mostly sold on the place to visitors, who frequent it in great numbers. The wood made this season is excellent, strong, hard, and brown to the very top. Passing into the Muscat-house, the crop

here is immense. The half is planted with Duke of Buccleuch, the other with Muscats and a few Golden Champion. What impressed me in this house was the noble deportment of the Duke. The growth is most robust; bunches, some two on a shoot, fine and symmetrical; berries enormous, just gaining that golden amber colour which it puts on so well. I have tasted this Grape frequently at various shows, and have now had an opportunity of examining plants, berries, and bunches by the score, and I can assure your readers it possesses all the qualities attributed to it. Whatever may occur elsewhere with this Grape, its free-growing, fertile and genuine character at Clovenfords is, like Cæsar's wife, above suspicion. The Muscats were fast ripening, and above an average crop.

Next entering the centre house, the display viewed from the end is magnificent, the jet-black clusters having a most imposing and striking appearance amongst the luxuriant green and yellow tinted foliage, perspectively terminating in what appears to be an unbroken mass of black Grapes. Gros Colman, the largest berried of all our black Grapes, is here grown extensively, finishing well, and is a grand market sort. Lady Downes is bearing heavy crops, many bunches over 2 lb. in weight, and finely finished. Barbarossas were carrying large fine shouldered-bunches; but Mr Thomson thinks it requires more heat than can be given in this late house, and is therefore going to introduce it largely into the Muscat-house, where a higher temperature can be maintained. Seacliffe Black was showing well. Black Alicante has done well, and is regarded as a valuable late Grape; Madresfield Court was also bearing a good crop: Mr Thomson thinks highly of the appearance of this Grape up to the time it is about to finish, when he has good cause to regard it as worthless: not a berry of it has he ever been able to send to market; whole bunches crack and decay in a few days before they are thoroughly matured. I do not write this in contemptuous speculation; at home and abroad, in England and Scotland, I find it the same. The last house in this range is exclusively devoted to Lady Downes. The crop is wonderful. Thousands of remarkably fine compact bunches, all nearly of equal size, are fast gaining maturity. Another great house, 200 feet long and 24 feet wide, with 2400 feet of piping, stands apart from the principal ranges on a slight eminence, and is mainly planted with Lady Downes, and here and there an Alicante. Another smaller viery, 70 feet long and 15 feet wide, stands near this, and is exclusively for Lady Downes, the fruit annually hanging in it to April. A watering-pot is never used in one of these vineries: the supply of pure water no way polluted is unlimited. The reservoir is at a considerable elevation above the vineyard, where it is supplied to each house by smaller pipes; these enter and are coiled round the side of the expansion tanks; in this way the cold water becomes mild before being applied. India-rubber hose are attached to each pipe, by means of which borders are watered, and vines syringed in any part of the house when such is necessary.

Pine-growing is carried on extensively and to perfection. The stoves, fine structures, are arranged in lean-to order against the boundary wall. Proceeding from Mr Thomson's dwelling, a small house contains a choice collection of Orchids in excellent health; next to this is the sucker-house, 70 feet long and 14 feet wide. Hundreds of fine young plants in 6-inch pots are here plunged in their winter quarters, to shift into the fruiting-pots early in spring. Following this is another stove, 145 feet long and 13 wide, with a pathway up the centre, with a bed back and front. This house is full of strong dwarf Queens, prepared to start into fruit in early spring. Things are not done by halves here: 400 Pines are started as an early batch in this house in January. Top and bottom heat

is abundantly supplied by 1500 feet of 4-inch piping, which is heated by one of Meiklejon's cruciform boilers. This is again succeeded by a large stove, 200 feet long and 16 wide, looking like a perfect field of Pines. The plants are all that could be desired; individually they are models of great substance, with rigid thick dark green leaves, so dwarf that the base of many fruit is not 8 inches from the pot. The weights average from 3 to 7 lb. Large fruit is not in demand in the market; quick returns are strictly kept in view. Many of the plants ripening fruit now were rootless suckers twelve months past in August. The supply and demand is incessant, sometimes dozens of fruit are cut in one day. Plants, too, are sold by the hundred. The varieties are all that is worth growing; smooth-leaved Cayennes and Queens form the principal stock; Charlotte Rothschilds, Black Jamaicas, Prickly Cayennes, Montserrats, and Prince Alberts are also grown in quantities. Now for the grand secret of this successful fertility: not a plant is in a pot exceeding 11-inch; Queens are all growing in 9-inch pots, Smooths in 10s, and the stronger growers, such as the Rothschild, in the larger size. The roots confined to such a small space soon become one solid mass, in fact, pot-bound; in this most satisfactory state no difficulty whatever is experienced in starting any quantity into fruit at a given time. The back wall of this house is covered with strong fruiting Vines in pots, principally Black Hamburgs and Duke of Buccleuch, all labelled as sold, and capable of bearing ten or twelve good bunches next season. Another Pine-stove, $\frac{3}{4}$ span, 200 feet long and 10 feet wide, temporarily contains hundreds of strong planting canes of the Duke of Buccleuch. This house and the one we have just left is heated by one of the Witley Court boilers, with 3800 feet of 4-inch piping attached, and does its work efficiently. A small Peach-house connects the upper Pine-stove with the pot-Vine house. The latter, a spacious erection, 186 feet long and 21 feet wide, is entirely filled with thousands of young Vines for sale. Hundreds are sent away for planting in a growing state in May and June. Where they can all go to is a mystery to me; but go they do, every one of them; and Mr Thomson is annually increasing his stock to keep pace with the demand. Not a cut-back two-year-old Vine is about the place. Mr Thomson prefers striking from the eye and growing them on in one season, selecting the strongest as fruiterers and the weaker ones as planters, and certainly the result does great credit to his practice. The fruiterers are growing in 10-inch pots, have made fine canes, and the ball is absolutely an impenetrable mass of roots. I presume your readers are all aware of his system of root-pruning inaugurated and practised by Mr Thomson in raising his young Vines. 1200 feet of piping are laid in this house, and heating done with one of Jones' of Manchester terminal saddle boilers, which Mr Thomson has great confidence in. Early forcing of Strawberries will soon lend an additional interest—great batches are potted, and promising well for next year's fruiting. President is Mr Thomson's favourite. The kitchen-garden is cropped with vegetables of all descriptions, and young fruit-trees, fine and abundant. A small flower-garden is very tastefully bedded out. What is remarkably striking and pleasantly observable throughout the entire ranges, is the utter absence of all insect-pests, which have never gained a footing under the vigilant eye of Mr Thomson. The houses are most substantial buildings, and were erected by Mr Stirling, Galashiels. The question may be asked, Why have such a place situated in this secluded corner, away from the aristocratic fruit-consuming haunts? The answer is simple, soil and other necessities peculiarly suited to the Vine (not everywhere to be had) are here of the first order; and is certainly highly entitled to the first consider-

ation, as being the grand repository wherein the substantial longevity and fruitfulness of the Vine is deposited—a lasting power which manures and stimulants can never impart. And, after all, the distance from commerce is of no moment, as a direct communication with all parts of the kingdom, by telegraph and rail, is at hand. Fruit, carefully packed in large boxes, and despatched by express train from Clovenfords after dark on a winter night, is safely offered in Covent Garden before daylight the following morning.

In closing this brief notice, I cannot help mentioning the masterly order which is evinced in this great establishment, resulting from the collective experience of years, which is transferred and exemplified on this spot, which four years ago was a remote pasture-field! No name could be more appropriately connected with this vineyard than that of the worthy founder and proprietor; who has done, and is doing, more to promote and render purely practical the culture of the Vine than any other person in Grape-growing history. H.



A VOICE FROM THE BOTHY.

GARDENING, our profession, is moving steadily step by step on its onward course; daily are the productions of the garden becoming, as it were, a necessity rather than as was wont a luxury of life. New inventions in connection therewith are brought to bear on nearly every point. Who on erecting a house would omit laying out a garden? The house itself would look odd without a finishing horticultural touch on its surroundings. What lady or person whatever does not admire flowers, or like to walk through the well-kept flower-garden? Winter and summer alike, there is always something pleasing and enticing in the garden of the diligent. The duties of the gardener are of the most pleasing and instructive character: how lovely it is to watch a simple dry seed inserted in soil and develop itself into a large individual plant! Still, his eyes must be keenly rested on everything under his charge; one hour's neglect of a tender plant would probably result in its entire destruction, after, perhaps, it has occupied months of his time to bring it to a state of perfection.

The amount of experience a man requires previous to taking a responsibility on his own account is no way small; he must spend years in the way of education, and that under good masters. But nevertheless there are persons at present holding high situations who, as it were, have crept into the profession without a clear understanding of all the various operations appertaining to their calling; they, on taking a charge on their own account, lack that amount of confidence which characterises a true and practical gardener. They must first learn to turn the sod. Many young men think that if they possess a good knowledge of indoor work that is all that is needed; and if they were ordered to edge a path, draw a drill, or make a Celery-

trench would be at a loss how to commence; so a knowledge of all the operations is not only invaluable but indispensable. Then, my young brethren, take the advice of one who, like yourselves, is striving in the art: commence at the bottom of the ladder, working steadily step by step to the top. Many have endeavoured to do so at once, but have signally failed. Certainly when a person thinks of the many items he must become acquainted with it is enough to dishearten him: I know it has been the case with me, but I will strive to gain the well-honoured profession, and by way of encouragement advise my young brethren to do likewise.

Much has been written in this and other gardening periodicals relating to gardeners, the chief topics touched being their instruction, wages, and accommodation in the way of living. With regard to the former I cannot say more than I have, save that all young men who contemplate being gardeners should be bound apprentice for a term not less than two years and pay a premium; and head-gardeners requiring a journeyman should only take into their service those who can show they have passed their apprenticeship. By that way we would, I think, get rid of those who, when they cannot succeed at anything else, turn their hands to gardening, thereby injuring the true class.

The recent rise of wages of journeymen and foremen, which was sadly wanted, has been very encouraging, and, as far as I know, they are in that respect pretty well cared for.

Next comes accommodation, which is, in my opinion, the most neglected thing in gardening. Really it is a disgrace to the profession to see the hovels some young men are provided with. There are some bothies I know where the men have to do everything themselves, and that in their own time. Some are well cared for in that respect, and have persons to attend to their bothy, and papers and books provided for their use, which is a great encouragement; but my opinion is that bothies only tend to lead young men into idle and filthy habits.

In conclusion let me advise my young brethren to spend their evenings and spare time in some way towards improving their stock of knowledge, reading and studying (there is a wide field for improvement), and not, as is too common in the bothy, sit down to a game of cards or dominoes.

CHARLES BENNETT.



NOTES FROM NEW ZEALAND.

THE annual general meeting of the Royal Horticultural Society of Otago, was held at the Athenæum, Dunedin, on the 30th of April, when the seventh annual

report was read. The Committee had to regret a falling off in the success of the Society. Three exhibitions were held during the past year, the first in October, the second in December, and the third in March. The exhibits were scarcely equal to former ones; and there had been a considerable falling off in the sums collected at the doors. The October show, held in the Masonic Hall, in so far as exhibits were concerned, was a decided success, but financially it was a total failure, on account of the inclemency of the weather. The show in December was much inferior, both in quantity and quality of exhibits, as compared with shows of former years. At the March show held in the Headquarters Drillshed, there was a falling off in the takings, as compared with that of the previous year, to the amount of £24. The balance sheet was read, and showed a balance to the credit of the society of £5, 11s. 5d. The amount taken at the three shows of the season was £40, 1s. 6d.

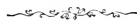
Grapes.—On the 14th of May there was exhibited in the shop of Mr Dunning, fruiterer, Princes Street, Dunedin, a bunch of Black Hamburgs, which, in size at least, has not been equalled in Dunedin. Before being disencumbered of some of the damaged fruit, the cluster weighed $4\frac{3}{4}$ lb. They are a portion of the first year's production, large in size, and of a sweet appetising quality. They were grown in the vinery of Mr R. Gillies, Park Street, without the aid of artificial heat.

Supply of Fruit and Forest Trees.—The following colonial advertisement will stand comparison with that of any of our home nurserymen. "Parties desirous of obtaining Fruit and Forest Trees, &c., can arrange for a supply at very moderate rates. The following are some of the principal sorts—each in great variety. Apples, Peaches, Nectarines, Pears, Cherries, Plums, Quinces, Apricots, Almonds, Oranges, Olives, Figs, Vines, Mulberries, Walnuts, Filberts, Chestnuts, Pomegranates, Pines, Cypress, Cedars, &c." Princes Street Cutting, Dunedin.

Exploration of the Alpine Flora of New Zealand.—The following extracts from a letter of Dr Lauder Lindsay, were read at a meeting of the Otago Institute, on the 13th May. "I am in a position now to give you further information about the movements of the Swedish Botanist who proceeds this year to New Zealand, to explore its Alpine Flora. . . . I have advised him to devote attention mainly to the classes of plants not hitherto studied in New Zealand; so that his collection will be sure to abound in novelties. . . . His name is Dr Ivan Berggren, of the University of Lund, Sweden, where he holds the office of Docent of Botany and assistant Curator of the University Herbarium. He is known to European botanists chiefly for his publications on Bryology; and his attention in New Zealand will no doubt be directed greatly to the *cryptogamia*, though he will collect phanerogams. His hobby is mountaineering, and the study of Alpine Cryptogams. He has already done good service and gained much valuable experiences in the Alps of Tyrol and Norway, as well as in Greenland and Spitzbergen, and was prepared in New Zealand for all the trials and troubles of glacier and Alpine exploration. . . . The cost will be a serious matter to Dr Berggren. He proposes to devote a year to Alpine exploration in New Zealand. I should hope that the colonists will do what they can to make his sojourn as little expensive as possible. His costs are to be borne by the University of Lund and the Academy of Sciences of Stockholm; but in Scandinavia a little money goes a long way, and our friends there have no idea of the cost of Colonial travel and living." After the reading of the extracts, the chairman suggested that the assistance of the Provincial Government should be asked. The council of the institute resolved to act on the sugges-

tion of the chairman and communicate with government, and also take suitable steps to greet Dr Berggren on his arrival.

Prosperity of Otago.—Otago is at present enjoying a full tide of prosperity, as is evident from the following statements of his honour the superintendent, at the opening of the Provincial Council, in which he says: "I am happy to say generally that at no period since the commencement of the settlement has the Province been more prosperous than now. There is a life and a buoyancy throughout every department of industry which has never been exceeded, and at no time have commercial obligations been more regularly met. The declared value of the imports during the past financial year has been £1,884,998, while the import duty has amounted to £262,000, or equal to about one-third of the customs revenue of the colony. The gold exported during the year has been 169,212, as against 166,372 ounces during the previous year. The total value of provincial produce exported inclusive of gold amounts to £2,279,663, as against £1,190,000 for the year before. This is equal to £70 per head for each statute adult in the province, an amount which, I venture to say, is unequalled in any other part of the world." These statements of his honour are borne out by those of others from the various districts of the province. A correspondent in Riverton, says, "A general activity prevails in all building and mechanical departments." Another says, "Some of the Taieri farmers have raised their men's wages £10 per annum, such is the scarcity of suitable agricultural labourers." The Lawrence paper says that "Labour has never been so scarce in the country as at present. All districts unite to swell the great cry now heard in the land for more labour. Every workman skilled or unskilled is fully employed, and an idle man, if to be seen, would be looked upon as a phenomenon. Men for new works cannot be obtained for love, money, or any other consideration." The *North Otago Times* says that in the Oamaru district double-furrow ploughs are not uncommon. But it seems that we are not to stop here, for on Tuesday last we saw a six-furrow plough at work on the farm of Messrs Gifford & Clowes, Columella. It was drawn by twelve bullocks, attended only by one man, keeping itself straight by its great grip of the ground and the guide wheels. It was working in very hard ground, compacted almost to the solidity of a road, having been heavily trampled by cattle for years, and was notwithstanding making excellent work, quite as good as could be done with a double-furrow. It breaks up four acres a-day for the cost of one man's wages—the bullocks being content with the natural pasture and a little oaten hay, while horses for like work require to be kept in condition by a liberal supply of oats. Then, again, there is a large saving in tear and wear of harness and cost of shoeing; indeed, it would seem that the plan adopted by Messrs Gifford & Clowes is about the cheapest that could be devised for preparing the land for sowing.



THE MANCHESTER INTERNATIONAL FRUIT SHOW.

THIS meeting was looked forward to with high expectations. It has come and gone, and Horticulturists have every reason to be satisfied with the result. The Council of the Manchester Botanical Society framed a schedule of unprecedented liberality. Exhibitors responded heartily, and under the able and unassuming management of their excellent Curator, Mr Bruce Findlay, the arrangements were carried out with the most complete success. The Society, the exhibitors,

the judges, and the public have every reason to be satisfied with the success and good feeling which pervaded the whole. The Banquet, under the presidency of the Earl of Derby, came off with great *éclat*, and the Rev. Reynolds Hole made, as he always does, a speech which will long be remembered for pith, point, and humour.

The Fruit and Vegetables were the great features of the Show. Never before was such a large and superlative lot of vegetables brought together at one Show. Turning to the Fruit there were several very remarkable productions. And we think the most conspicuously so was the Queen Pine-apple from Mr Sandford, gardener to the Earl of Bective, Westmoreland. This is, as far as we are aware, the most handsome and huge Queen Pine ever produced in this country. It weighed 8 lb. 4 oz., and was of most perfect symmetry. The number of Pines exhibited was below what might have been looked for, and, with the exception of the Queen named and two Envilles from Mr Miles, gardener to Lord Carrington, their quality was not remarkable. These Envilles weighed, the one 9 lb. 14 oz., and the other 9 lb. 9 oz. Mr Miller, Worksop Manor, had two very pretty Queens weighing about 5 lb. each. Mr Hunter, Lambton Castle, showed three plants in fruit of the Lambton Castle Seedling as examples of this fine pine in various stages of growth—one on a mere sucker, which, when fully swollen, must be over 6 lb. weight; and fruit on larger plants that will swell to 10 or 11 lb. We have tasted this pine when ripe, and found it one of the finest flavoured and most juicy pines known. It was awarded a first prize.

There were some very remarkable exhibitions of Grapes, probably the most splendid ever shown before. At the same time there were a great many very inferior, and not many of the White Grapes could be said to be high coloured, while many were positively green and unripe. Mr Hunter, gardener to Earl Durham, held the post of honour with great ease in all the chief classes for Grapes, and Mr Johnston of Glamis the second place, in the collection of ten. It is generally admitted that both in the collection of ten and in that of five varieties, the clusters Mr Hunter exhibited were never surpassed, if indeed equalled, at any previous exhibition. They were of gigantic size and splendid finish; and the perfect manner in which they had been carried and staged was most creditable. Mr Hill of Keele Hall, one of our oldest and most successful exhibitors, showed in capital style for the collection of ten. In the collection of five, Mr Bruce, gardener to James Field, Esq., made an excellent second, though his bunches were considerably less than Mr Hunter's. In the collection of Grapes not included in the other classes, Mr Hunter was again first with fourteen varieties, all of excellent quality. There was a very spirited competition for the three bunches of Black Hamburg, and Mr Coleman, Eastnor Castle, won the place of honour with ease, having three bunches absolutely perfect in finish, as well as large in bunch and berry. Mr Temple of Blenheim took the second place with moderate sized but beautifully finished bunches, and Mr Bruce was third with three very pretty bunches. For three bunches of Muscats there was also great competition, and Mr Hunter took the lead in this class also, but was closely pressed by Mr Roberts, gardener to the Earl of Charleville, Ireland. Mr Roberts' berries were larger, but they had been rather too severely thinned, and showed here and there too much of the stalks of the berries. Mr Hunter's were less in berry, heavier in bunch, and compact and highly finished. Mr Meads of Farnborough was third with three very handsome bunches. For the three best bunches of any other White Grapes, Mr Hunter again took the lead with three fine bunches of the well-abused Golden Champion. Mr Hill, Keele Hall, was second with splendid examples of Foster's White Seedling, a very hand-

some grape; Mr Goodacre of Elvaston Castle being third with three fine bunches of Cannon Hall Muscat, scarcely ripe. In the class for the Heaviest White, Mr Dickson of Arkland Lodge, Dumfries, keeps up his reputation for monster bunches, although a little below his usual mark with a fine bunch 16 lb. 6 oz. Mr Hunter is first for the Heaviest Black with the heaviest bunch of Black Hamburg ever recorded, a perfect monster, weighing no less than 13 lb. 4 oz.

The collections of fruit were not so numerous, nor, with a few exceptions, so fine in quality as the liberal prizes offered for them ought to have called out. Mr Johnston of Glamis staged a very fine collection of twenty dishes, and took the first prize, leaving room for three or four more collections between his and the others. The second prize collection came from Her Majesty's Gardens, Frogmore, and was very weak in most of its points, Grapes and Pines being especially deficient.

In the collection of fifteen dishes, Mr Simpson of Wortley Hall and Mr Upjohn, Worsely Hall, were almost a tie, and had to be carefully decided by points, when it was found Mr Simpson marked highest. His Grapes were scarcely so good as Mr Upjohn's, but his Stone-fruits, Melons, and Pines were better.

In the collection of ten kinds of Fruit, exclusive of Pines, Mr Miles, gardener to Lord Carrington, was placed first; Mr James, gardener to Sir C. R. Broughton, Bart. and Mr Bannerman, Bagot Park, were respectively second and third. The fruit in these collections were very creditable.

The prize for Fruiterers' Collections was easily won by Mr Mason, fruiterer, Bolton, and it was a very splendid table of fruit, and most effectively arranged. For a pair of bunches of new Grapes three years in commerce, Mr Meredith was first with beautiful examples of Madresfield Court. And a first prize was awarded to Mr Thomson, Tweed Vineyard, for his Duke of Buccleuch grape.

The exhibition of out-door Stone-fruits, such as Apricots, Plums, Peaches, &c., was meagre, and the same may be said of Apples and Pears; and, considering the liberal prizes offered for them, their deficiency is no doubt accounted for by the cold and ungenial season. Melons were numerous, but with the exception of the first prize specimen—a Queen Emma, which was excellent—they were very inferior.

The exhibition of flowering-plants in pots, as might be expected, was not extensive; but Messrs Cole of Manchester staged a large bank of finely managed plants. Of cut-flowers there was a fine display, especially in Hollyhocks, Dahlias, Gladiolus, and miscellaneous hardy flowers and Asters. Mr Kelway staged no less than 300 spikes of Gladioli, which, on a moss-covered sloping bank, had a fine effect.

The Vegetables were in great quantity and splendid quality, filling the whole of an immense tent; and of Potatoes there was probably the largest collection of splendid tubers ever before collected in one tent.

Hothouses, Garden Implements, Boilers, &c., were well and numerously represented; but we cannot enter into particulars of these any more than of the other departments of the Show, for it would more than fill the whole of our pages. Mr Cowan had his Limekiln Heating Apparatus at work, and, judging from the intense heat of the pipes, under very adverse circumstances, and the very little attention required from the stoker, this system must be reckoned a success wherever limestone can be easily procured.

Calendar.

KITCHEN-GARDEN.

THERE is generally during this month much to do in the way of "clearing up" in the kitchen-garden. The remains of crops of all kinds should be taken to a position to rot for future dressing, or they can be turned into the bottom of trenches where trenching is being done. Weeds on vacant ground may be collected in ridges and manure wheeled over them, when the whole can be dug down and the land left in ridges for the winter. When weeds are full of seed it is better to burn them. This has often to be had recourse to in places where the garden has no rubbish-heap hidden from view. We have ourselves fires going during the most of the summer and winter burning weeds, leaves, and grass, which are full of rotten sticks; and this material is of great value when mixed with other enriching stuff. Cabbage lately planted should be looked over to see that grubs are not doing mischief. A watering two or three times in succession will stop the work of vermin. Often large grubs are found at the collars of the plants, and can be picked up and thus destroyed. Where Cabbage have to be planted, the work should be finished as early as possible: if they are of good size, and can be lifted with all their roots, they will yet make sufficient growth before winter sets in. Smaller plants should be cared for, and have the soil nicely pressed to their stems; a dusting of ashes and soot among them will keep slugs away. Cauliflower should now be protected with frames; hoops, on which mats, &c., can be thrown in severe weather, answer well. A border sheltered from north and east, where damp does not lodge, is a good position for wintering the plants in. Those placed on ridges or borders under hand lights should have plenty of air, and means, such as dustings of soot, be taken to keep away vermin. Some plant Mazagan Beans about the end of the month; a dry warm border should be chosen, and the seed should be sown more thickly than during more favourable seasons. Sowings made in boxes, &c., at the end of the year, to be planted out when ready, is the

system which gives least labour and saves annoyance from mice, &c. Peas may be left till next month if there are not means to raise them under cover. Plant plenty of Lettuces thickly on ridges and borders to come in early in spring; damp is their worst enemy. Lettuces which were planted last month require to be neatly gone through with a small hoe or pointed stick. The surface should be kept open, but broken finely to prevent slugs from sheltering among the clods. Get Lettuce lifted into pits or frames for present and winter use, but if they have been grown in the structures they will be easier managed. The same applies to Endive. Have protection ready to put over young Carrots and Radishes; litter or fern thrown over during severe weather answers well in absence of frames, &c. Put Chicory into a cellar to grow and blanch for Salads; any place suits where light and air can be kept out. Small Salads should be sown frequently. Young Onions can be started in heat, and then brought to light and air. Carrots and Beet may be stored in cellars kept dark and free from currents of air; a quantity of straw thrown over the roots will keep them fresh. Pits formed as for Potatoes answer well for them, but roots should never be covered up when sodden wet. Parsnips keep sounder and better flavoured in the ground; a few can be lifted to have in store if frosty weather should set in. Jerusalem Artichokes may be treated in the same way, but their roots will continue to grow for some time to come. Potatoes should all be lifted as early as possible: disease is doing much harm in some places, and it will increase if the tubers remain in the damp ground. Thin, clean, and surface-stir Spinach as may be necessary. Tomatoes on open walls should be gathered soon and placed in a dry structure to ripen. Keep luxuriant leaves cut away to expose the fruit to light. Protection during frosty nights may keep the fruit and plants safe for some time, and the fruit will increase in size. Keep young plants to supply Tomatoes in spring growing freely,

but they should not be over-potted. Turnips for late supply should be kept clean and well hoed. A good breadth of Celery should be earthed up to keep supplies according to the demand. If the crop should be growing on poor light land, a good soaking of manure-water might be given at the roots the day before earthing is performed. Rhubarb and Seakale should have the decaying leaves taken away; and where there is plenty of roots to force, a stock of the ripest may be got ready. For the first supply we have always found Prince Albert answer admirably. The

advantages of a cellar to force Seakale in are great; no artificial heat being required, the produce is very crisp and tender. Mushrooms also do well in the same quarters. All garden-work should be advanced now as far as possible, draining, laying of Box, renewing the Herb-ground, gravelling, &c., should have attention as early as possible. Get manure wheeled on vacant ground to be trenched or dug down. Cut off Asparagus tops as they become yellow. Keep the beds clean, and lift roots for forcing. Sow more French Beans in pots.

FORCING DEPARTMENT.

Pines.—Early-potted suckers will now be well rooted and established; and, where there are light pine pits, any of them that are likely to become pot-bound by February may have a shift into pots a size larger, and be encouraged to grow for the next month. This is especially desirable if there is a scarcity of stock for ripening fruit next autumn, for these early suckers, if not overshifted, can be got into fruit for next autumn. In ordinary cases, where these remarks do not apply, the night temperature for well-rooted suckers should not range higher than from 60° to 65° according as the nights are cold or mild. The bottom-heat should not range higher than from 75° to 80°; and with the decline of sunshine and heat, the moisture, both in the soil and air, requires to be lessened. Succession stock intended for starting in January keep in a comparative state of rest for the next three months; 60° at night is heat sufficient for these, with a bottom-heat the same as recommended for established suckers. Give air by day when the temperature exceeds 70°, so that it does not rise to an exciting degree. It is seldom that, in beds of tan or leaves, these require water at the root throughout the winter; and if the plunging material is not resting firmly against the pots and reaching to their rims, it should be made to do so now, for the less water they require the better, and if loosely plunged they are more likely to become over dry. This is especially applicable to those having pipes under the tan or leaves. Where fruit is swelling off keep the atmosphere with the temperature ranging at 70° at night.

Shut these up early in the afternoon with sun heat, so that the temperature for a time reaches to 85°. Attend carefully to these with water, and never allow them to become over dry, but just keep the soil steadily moist, and water with weak guano water when they require any. See that they have a steady bottom-heat of about 85°. When there are no pipes for bottom-heat, see that the heat in the bed does not decline suddenly, as it often does towards the end of this month; and if it does decline, fork in some fresh tan, and replunge the pots to their rims in it. Suckers of smooth Cayennes and other winter sorts that are sufficiently advanced should be detached from the parent plants and potted, and otherwise treated as directed for suckers last month. Ripe fruit, if removed to a dry room, will keep in good condition for weeks on the plants at this season.

Vines.—Late Grapes intended to hang through the winter should be perfectly ripe by the beginning of this month. But if in any case they are not, assist their ripening with fire-heat and a free circulation of warm air. All Grapes that have been ripe for some time will require to be looked over twice or thrice weekly, and any bad berries cut out of them. On fine days after damp ones, put a little heat into pipes, and air freely to expel damp, but keep the ventilators closed on damp drizzly days to exclude damp, and keep everything about the vineries dry and clean. In wet localities let all the outside borders of vineries where Grapes are hanging be protected thoroughly from rains, and if

there is any doubt about the working of the front main drain, let it be seen to at once. Keep Vines from which the fruit is all cut cool and airy, unless, as directed last month, in the case of strong growing Vines that are not so ripe as they should be, letting these be fired till the wood is brown and hard and compact. This also applies to young Vines planted this year, and which should not now be allowed to make any more fresh growth, but be fired, aired, and kept rather dry at the root until the wood is perfectly ripened. If they are at all crowded, and have more than one joint on the lateral growths, let all be removed now by degrees except one bud and leaf, so that a free circulation of light and air may play about the Vines. If Vines from which spring Grapes are expected are not already pruned no time should now be lost in getting it done. Remove all loose bark from their stems; and if there has been any red-spider about them last year, scrub them well with a hard brush and soapy water. Brush and if possible paint all the wood-work; remove the soil from the surface of the border, and replace it with fresh soil. Then dress the Vines with the usual mixture, and all will so far be in readiness for a start when desired. Pot-Vines that may have been standing outdoors should be removed to some place where their roots can be protected from heavy rains. When a start with these is contemplated towards the end of the month, dress any knife-wound about them with styptic at once, and when started it will be a great advantage if they can be plunged in a mild bottom-heat. It is always advisable when starting pot-Vines thus early to put a few more into heat than are required, as a few may not start and show satisfactorily, and it is very little use to start so early unless with first-class, early, and well-ripened Vines that have had a rest.

Peaches.—Keep all trees that are well ripened, cool and well aired; but where the wood in late houses is still unripe, fire and keep up a circulation of air about the trees till they are ripe. Trees that were planted a season or two ago, and that have grown grossly, should be partially lifted just as they begin to shed their leaves. Where new borders and planting young trees

is contemplated, this is an excellent month for the operation. But the trees should not be moved too early, or the wood will shrivel. It should be done just as the leaves are ready to drop. Some of late varieties of fruit in late cool houses will be to gather yet; see that these are exposed to all the sun going, or they will be colourless and deficient in flavour.

Figs.—Generally Figs will all be gathered by the middle of this month; but where there are any ripening, let them have warmth and a free circulation of air, and do not gather till they are about to drop, or they will not be good. Keep those from which the fruit are all gathered cool and somewhat dry at the root. Remove all superfluous shoots not required for next season's crop. Early plants in pots will now have shed their leaves, and should be protected from heavy rains.

Melons.—Keep the night temperature at 70°; and as the Melons approach the ripening stage, keep them dry at the root, and keep a free circulation of air about them. When more ripen than are required, wrap them in dry cotton wadding, and place them in the fruit-room and they will keep a long time.

Cucumbers.—Do not allow the heat to sink below 70° at night. Keep up a genial growing atmosphere, and keep the plants moderately moist at the roots. Do not let young plants bear many Cucumbers at one time, or it will weaken them for the winter. Lessen the moisture in the atmosphere and in the soil as the season becomes more dull and the nights longer. Stop them at every joint, and do not let the foliage become crowded. Give air on all fine days, and shut up with sun-heat early in the afternoon.

Strawberries in Pots.—These should now have their pots well filled with roots, and the crowns strong and matured. Protect the plants from heavy rains, either by placing them in cold frames or pits, or by laying the pots on their sides with the crowns to the south, until such time as they can be placed in winter quarters. Any late plants may be placed under glass, where they will complete their growth better than in the open air.

Notices to Correspondents.

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in the 'Gardener' to David Thomson, Drumlanrig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to, be forwarded by the middle of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

AMATEUR.—We do not approve of cutting the leaves of Strawberries at any season, and do not know of any advantage that can arise from the practice, but, on the contrary, it must weaken the fruit-bearing crowns. Give them plenty of room, but do not cut off the leaves.

S. M. L.—You will find the information you ask for in our present issue, under the head of "New and Select Florist Flowers." For the other matter you must apply to some horticultural engineer. We never recommend tradesmen of any sort. Consult our advertising columns.

GARDENER.—The cracking of Melons is caused by keeping the soil too wet, especially after they are fully swollen. This sunless wet season has also had to do with it, and some varieties are more subject to crack under such conditions than others.

DELTA.—Mr Cowan's compensating system of heating does not save so very much of coal; but it manufactures sufficient lime to pay for the coal, and heats hothouses at the same time. We saw it at work at the great show at Manchester, and believe it to be all that Mr Cowan represents it to be.

X. X.—We are sorry that you think you have reason to complain. We do not expect to please everybody, neither do we intend to abandon our self-respect in attempting to do so.

A NOVICE.—The cause of your Cauliflowers going wrong as you describe, is the very great amount of wet you have, in common with many others, experienced the last ten weeks.

F. W.—Sow the Kales about the end of April in poor soil. Prick them out thinly in beds—in poor soil—when fit to handle. Before transplanting them in autumn cut round each plant with a small spade or trowel, and in a fortnight after remove them, with balls, to the beds.

T. P. F.—The Duke of Buccleuch Grape does well on its own roots; but our own experience is that the Muscat of Alexandria is *the* stock for both it and the Golden Champion. It does not follow that because a Vine is very strong growing that it makes a good stock for others. Gros Guillaume, a very strong grower, is the worst of stocks, and it does best itself in Muscat roots. We have proved this beyond a doubt. Black Hamburg, an excellent stock for some Grapes, is not the stock for Gros Guillaume. It does very well on Hamburg roots for about two years, and then goes back; others have proved this besides ourselves.

C. S.—We will do our best to meet your case, especially as it may be of use to others besides yourself.

C. L. C.—In dry soils Anemones may be left in the beds for several years. If yours are thick in the beds, you may take them up and renew the soil, or dig it well and replant.

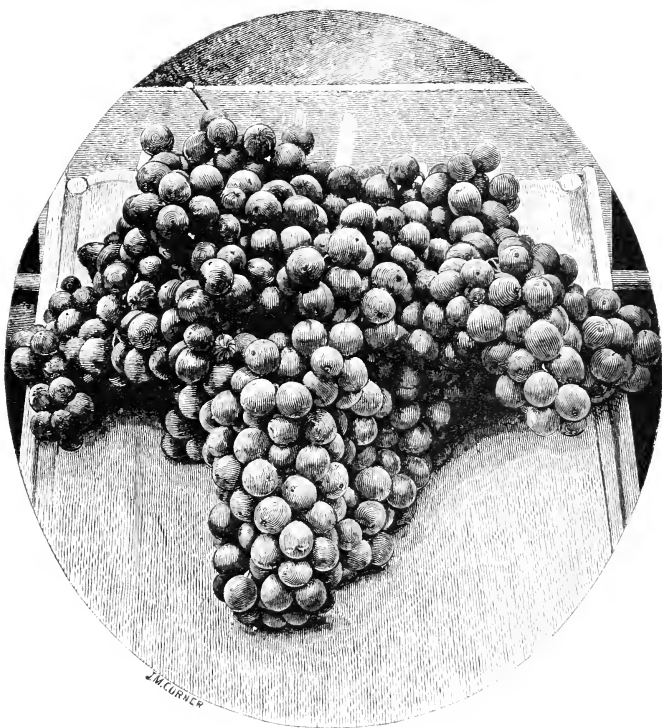


FIG. 17.—THE LAMBTON BUNCH OF GRAPES.

THE
GARDENER.

NOVEMBER 1873.



HINTS FOR THE WINTER, &c.



HARD winter and dear coals: the former of these conditions is possible; the latter, judging from the present aspect of the coal trade, is certain. The combination is of a character that must of necessity swell the cost-book of all who have to protect tender plants and fruits from frost, especially of those who have to "force early," and keep tropical plants in good condition. How to accomplish this with the least waste of heat consistent with success was never a question of more importance than it is now; at least not since the railroad made coals more comeatable, and consequently lowered their price in many parts of the kingdom. The question is one which of necessity affects a very numerous class, and especially amateurs who have—more from their ardent love of hothouse and greenhouse plants—been impelled into their culture without, at the same time, having a wide margin of wealth to make them indifferent to or independent of a few pounds more or less spent on coals. Hence we conclude that any hints which may be of use to a class who constitute a large number of our readers, cannot be uninteresting at this season, with the prospect of dear coals and the possibility of a hard winter.

Among the principles of culture which bear favourably on economy in this point, stands somewhat prominently that of low night temperature, which has lately been very ably discussed by several of our correspondents. If this principle be correct at any season of the year, the next four months—which constitute the season of rest to most plants—is

certainly the most expensive heating season of the year, and, to our mind, the season when low night temperatures are safest. As has been frequently pointed out, a high night temperature, when we have barely eight hours' daylight and sixteen hours of darkness, is attended with the most unnatural and debilitating consequences to plants. Of course there are extremes towards the other end of the scale of heat on which it is not safe to experiment. But, from observation and personal experience, we are quite convinced that our tropical plants, if properly treated in summer, will bear a lower winter night temperature not only with impunity but with advantage. We could instance numerous instances of great success attending this practice. In our own experience the finest crop of Pine-Apples we ever produced was from plants that stood through a very severe winter in a pit, in which, for weeks in succession, we could not keep the thermometer from falling to 45° at midnight and at daylight. We had considerable anxiety about the consequences to a very fine lot of plants. But when the starting time—about May—arrived the result was as we have stated; and except in the case of Pines intended for starting into fruit in January, we would be quite satisfied with 50° during very severe weather, and 55° as a maximum in mild winters. As compared with higher temperatures, this effects a great saving in coals. We have recently inspected a mixed collection of Orchids, including especially Vandas in more than usual vigour and substance, which was wintered last year at a temperature many degrees lower than the standard temperature generally recommended in the case of such plants. And we were particularly struck with the broad stout leaves and dark green of the Vandas and other East Indian Orchids. It must, however, be stated that to winter such plants at so low a temperature requires some difference in their treatment during summer when they make most growth. And having named Vandas, we have no hesitation in saying that as a rule they are grown with far too much shade and too little air in summer. The consequence of this is an attenuated, soft, drooping foliage which would not be safe in a low night temperature in winter. But given a Vanda with broad, short, thick leaves, standing at almost a right angle with the stem, and we have no hesitation in saying that it is perfectly safe at 55° at night all through a hard winter. The same remarks apply to Pines and all tropical plants. To winter perfectly they must not be steamed and stifled into mere weeds in summer.

Another point of economy, and also one that may be regarded as good culture, is to apply coverings to the surface of the glass when the weather is cold. This is a great point of economy in firing, and one that is attended with good results to the plants. There is no reason why all comparatively low pits and houses should not be

covered at night in severe weather ; and we are certain that many will endorse our views and experience that it saves much coal, and is better for Pines and winter Cucumbers to keep up the required temperature by the assistance of coverings, than to do it by sheer hard firing without them. To arrest the immensely rapid radiation of heat that goes on from the surface of a glass-house, where a comparatively high temperature is required, by a covering, cannot but be beneficial in its results to plants as compared with highly-heated pipes and comparatively parched air. And to any one who has a small glass-house from which frost has to be excluded, we say, cover as much of it, especially the roof, as possible ; it will save your coals and be vastly better for your plants.

But there are many of our readers who have to protect plants in pits to which no fire-heat can be applied, and to whom the foregoing remarks are comparatively valueless. A few remarks as to how they can best cope with hard weather may be opportune at this the approach of winter ; and we will here repeat part of instructions which we wrote twelve years ago. There is one condition at which they must aim, of the very first importance—that is dryness. Whenever tender plants have to be saved by mere protection, dryness is of vast moment. All about the pit should be dry, and the inside of it should be open and thoroughly drained. Indeed, if a staging slightly elevated above the floor can be afforded all the better. To prepare the plants for a long cover up and darkness in such pits, they should be kept dry to the drooping point. They should also be regularly exposed to air during dry weather. This, and the removal of all decayed or crowding foliage in the case of Geraniums and other soft-wooded plants, assists in producing a state of maturity and firmness and rest too, which will enable them to withstand a cold, confined, damp atmosphere, and the absence of light, with the least possible injury when they have to be covered up for days, and it may be weeks at a time.

The manner in which such plants are covered and uncovered during a severe, and it may be a changeable winter, has much to do with success. The best non-conducting material is some dry loose material, such as hay or straw, and the drier and more loosely it is applied the better. In covering with, perhaps, a mat and dry litter, the too common method of applying them is first to lay the mats on the glass, and the loose litter over all. This should just be reversed ; the litter should be put next the glass, and the mat over all, making sure that the hay or straw lies as loosely and open as possible, thus ensuring as much air amongst it as can be. A piece of strong calico or canvas dipped in oil, to make it waterproof, is about the best outside covering for cold pits.

When from continued frost it becomes necessary to keep the glass closely covered up for many days at a time, and especially if the temperature in the pit should recede below the freezing point, the great error into which many fall is to uncover the plants immediately the weather changes to a thaw. This sudden uncovering to light causes such a reaction as is ten times more damaging than a few degrees of frost. Plants are living things, possessing all the sensibilities of the most perfect and delicate organisms, and are as susceptible of injury from sudden changes as is the animal frame. Sudden change should not therefore be produced ; for, if they are affected with frost, a too sudden thaw ruptures their tissues, and rottenness ensues. Do not hastily remove the covering nor at once, but some time after thaw sets in, and by degrees, and so allow the frost to creep gradually out as it crept in. This is acting on the same principle practised by the cook in thawing her Cabbage slowly in water, instead of hastily in warm water. In the one case the process is so gradual that the vegetable tissue does not suffer ; in the other case it experiences such a rupture that the wholesome vegetable soon becomes poisonous.

The successful wintering of tender plants, whether in cold frames or in hothouses, depends very much on the way they are managed in summer and autumn. It can easily be understood how any tropical plant, be it Orchid or any other stove plant or Pine-Apple, which has been grown all summer in a temperature that is too high, and with too little air and too much shade, becomes so tender as to render it not safe in a temperature where one differently treated in summer would not only be safe, but in the best possible keeping ; so that in the one case there is not only an injurious waste of coal in summer, but there is also, from the flabby immaturity of growth thereby produced, a necessity for the same waste in winter also. Let Vandas, for instance, be grown with a proper complement of air and light, and a less enervating heat in summer, and a very small collection will be almost constantly in bloom ; while one similarly treated will yield a comparatively small portion of bloom spikes, and be more like a Leek in the flabbiness of its foliage. The same principle of culture applies to many other plants of the most costly description ; and we shall be glad if these remarks lead our correspondents to give their views and experience of this subject.



WINTER BEDDING.

THERE are now so many plants which are quite hardy, used for effect in summer bedding, that it is worth while to consider how they may be so combined with the tender plants in summer that they may

occupy the same positions throughout the ensuing winter without removal. Of this nature are many of the Saxifrages, and the coloured hardy Sedums, such as *Corsicum*, *glaucum*, *lucidum*, *rupestris*, and others; then there is Golden Feather pyrethrum, *Festuca glauca*, Golden Thyme, *Sempervivums* of various sorts, *Violas* of sorts, *Antennaria tomentosa*. The larger and denser green Saxifrages are very useful in this way for summer and winter, for edging and dividing lines. When the tender things have all been either killed out or removed, it will then be seen what is wanted to fill up, as regards height and colour, and in doing so the effect in spring should be taken into account as well as the covering of the ground in winter. For pure winter bedding there is nothing to be compared to dwarf shrubs, of which there is an abundance, and new varieties still make their appearance.

The common Laurel is one of the best plants for making up masses in the middle of large beds; when dwarf bushy plants are used it makes a bright-green carpet, and moves like a weed; it has the further advantage of being easily bought, or propagated at home. The round leaved (so called) variety, *rotundifolia*, is even more handsome and robust, resembling a *Magnolia* in general appearance. The Portugal Laurel contrasts well with the above with its bronzy-green colour; it is not, however, so accommodating to removal.

The *Retinosporas* in their young state are particularly graceful and appropriate for winter bedding. They are cheap, easily moved about,—that is, stand frequent removal perfectly, and are easily propagated by cuttings, layers, or in some instances by offsets.

R. pisifera is a bright green, and exceedingly graceful in a young and healthy state. *R. pisifera aurea* is a model plant for winter bedding: it is dwarf and spreading, and of a bright yellow colour all over the tips of the branchlets. *Thuja semperaurescens* promises to be even a better plant in the same way in some parts of the country. *Retinospora leptoclada* is a favourite plant; is also cheap and very neat in habit, of a bronzy-green above and glaucous-green in the shade. *R. ericoides* is indispensable for winter bedding, is very easily propagated by cuttings or branches stripped off the sides: small plants are admirably suited, from its squat habit, for edging, and plants 12 to 24 inches are cheap enough, and fine for the centres of clumps; indeed it looks its best at about 15 inches high.

Euonymus japonicus, either the green or variegated, are very desirable, the latter especially so; its foliage a fine dark showy green, and the variegated either yellow or white makes it always look showy; it is a clean-looking plant. It is easily propagated by cuttings in a shady place under hand-lights in the autumn. *Euonymus radicans* varie-

gatus also strikes easily under hand-lights in sandy peat or fresh sandy loam; it is another model bedding plant, grows low and bushy, and the fine shiny foliage is always clean and fresh looking: it is a wonder this plant is not more planted to grow up walls like Ivy: it makes much larger foliage and stronger shoots when clinging to a wall after the manner of the Ivy itself. The small Silver Queen Ivy is a plant after the style of this pretty *Euonymus*, of a beautiful white variegation, but rather dear.

Skimmia japonica and *oblata* are chiefly striking from their berries, the foliage being broad and *Rhododendron*-like. Of all winter bedding plants the richest are the Gold and Silver Queen Hollies: they have a particularly bright and clean appearance, bear shifting with impunity when they get used to it, when once they get a mop of fibrous roots with frequent removal; they are of course impatient of removal if they have stood long in one place; but the same remark applies to most plants; we moved several hundreds last April and they scarcely lost a leaf. One drawback to their extensive use is their high price, but a few good plants give more effect than double the quantity of other things at the same cost. Waterer's Holly is also good, but for bedding purposes second to the two Queens. *Aucuba japonica* can now be bought for 4s. per dozen, stocky little plants for winter bedding: it requires no recommendation, as it is indispensable, especially in moist parts of the country: it is easily propagated by cuttings in sandy soil, in a shaded position behind an east wall—a north wall is too cold: the position must be naturally sheltered and moist; under these circumstances it strikes as readily as a common Laurel. *Berberis aquifolia*, though not a striking plant except when in bloom, still is a cheap plant for covering the ground. Good, well-grown plants of *Daphne cneorum* are well suited for bedding; it is readily propagated by off-sets.

Dwarf healthy plants of *Rhododendron Ponticum* are special favourites on a sandy soil for winter work. They are very cheap, and are always fresh-looking throughout the winter.

Plants, however, must be had from country nurseries; indeed we prefer all those Dwarf shrubs from country nurseries where they have been grown a long way from the influence of coal smoke from town collieries or works: plants raised in a clean pure atmosphere are much better coloured, fresher, and healthier; we have had the opportunity of comparing them, and the town plants are often miserable-looking objects compared with those from the country of the same age.

Cupressus Lawsoniana and its variety *nana*, *Cupressus Thyoides*, and *Thyoides variegata*, *Abies pygmaea*, are all good additions to the list. *Cupressus Nutkænsis* must not be forgotten, a special favourite, so hardy, green, and graceful.

With respect to arrangements, the last-named plant makes a good centre mass with a band of *Retinospora ericoides* edged with *R. pisifera aurea* or *Euonymus radicans variegatus*. Dwarf plants of *Laurestinus* in bloom, where they do well—they are this year covered with bloom just opening—make grand centres, banded with *Aucuba* and edged with *R. ericoides*. With a view to spring effect, if the shrubs be not too thickly planted, such things as *Anemones*, *Wall-flowers*, especially the *Belvoir Yellow*, *Forget-me-Nots*, can be planted among them with good effect: now is the time to plant. Of course beds of *Wall-flowers* by themselves look as well as many shrubs in winter, with the advantage of the flowers in spring, always supposing there is no game to destroy them.

Large beds may have their centres filled up with the shrubs and then banded round with *Myosotis*, *Alyssums*, *Arabis*, *Aubrietias*, *Daisies*, &c. We are now filling in beds with winter and spring things, part of the design having stood all the summer and will be retained, with *Myosotis dissitiflora* and *alpestris*, *Silene pendula*, and *Arabis*; part will also be filled with bulbs.

A bed in which was a mass of *Calceolaria* in summer will be filled with *Retinospora pisifera aurea*; a band of *Viola cornuta Perfection* exists and will remain; *Hyacinths* will be inserted where a band of white-leaved *Geraniums* was killed out; next a band of *Festuca glauca* remains, and a strip of *Tulips* will be inserted between the *Festuca* and the edging of *Sedum glaucum*. *Iberis sempervirens* and one we have called *Tenoreana* are excellent shrub-like plants for edging beds of dwarf shrubs, especially the latter, and are sheets of white and pinkish white in early spring.

A pink form of the native *Lamium album maculatum* is a beautiful addition to the winter and spring garden: the purple is well enough known and also the white form, but this is of the same shade as *Saponaria*, which with its variegated leaves makes it a very striking plant in early spring. It may possibly be met with in many places in the hedgerows. It associates well with *Myosotis* and *Arabis*, or between lines of *Myosotis* and *Aubrietia*: but we are sliding into spring gardening, when we meant to confine ourselves mainly to winter bedding.

THE SQUIRE'S GARDENER.

THE POTATO DISEASE.

WE desire to introduce this subject as surreptitiously as possible. It is one which is supposed to have the same effect upon an editor as a red rag has upon a bull. It is a well known fact that last year the edi-

torial sanctums were infested with the *Botrytis infestans* in a desperately aggravated form; and we heard of one editor who was, by his own confession, positively "sick of the disease;" and who resorted to disinfecting measures of the most rigorous description for stamping it out. His plan was by fire. Every missive supposed to contain "spores," either "resting" or "active," was carefully reconnoitred and then transferred to the flame. It is needless to say that the plan was completely effectual.

We have an impression that scientists carry themselves rather loftily in the disease matter. THEY know what it is, and how it comes; they have traced the destroyer to his very lair, but they have not caught him. Whenever the disease is worse than usual, the "practicals" are down directly with a host of facts and suggestions, which our philosopher treats in a half patronising, half supercilious manner. These things are not new to him! O dear, no! There is no mystery about the potato disease, none whatever. Mr Fungophobia has long ago pointed out the cause, and no measures for its prevention which are not based upon Fungophobia's theory, can possibly be attended with success. *They* feel it their duty to impress this upon the public, as they have often done before, and they reproduce Fungophobia's statements, and trot out his procession of queer-looking objects, having a strong resemblance to tadpoles, and which the potato-grower is told he *must* catch, drown, suffocate, or do away with in some way or other, before his emancipation comes; all of which appears to the practical common-sense farmer like a proposal to bottle up the wind, and quite as feasible. For anything he knows, he may be carrying thousands of "resting spores" among the hairs of his head, and setting a colony sufficient to infest a whole district at liberty every time he takes his hat off in the field, unless disinfecting measures begin upon his own person.

But seriously, is it possible that a disease which affects other plants beside the potato, which is so subtle in its development, and which spreads with a rapidity entirely beyond our comprehension, is likely to be stamped out or even abated by any measures of a merely disinfecting kind, supposing the fungus theory to be correct, which is disputed by not a few thinkers? It is certain that the potato disease was almost unknown before 1845, but the *Botrytis infestans* was familiar enough to fungologists before that time. What then caused it to attack the potato with such virulence all at once? This has never yet been explained, and the fact has led many to believe that the fungus is but the consequence not the cause of the disease. There is no doubt about the presence of the parasite in every diseased potato, but it is just as likely as not that it came there because the conditions for

its development were favourable, in the same way that mildew can be produced upon the Vine by certain treatment, and made to disappear when that treatment is altered. I confess to having little or no hope that we shall ever be able to eradicate the disease altogether, though we may check it; but who can say that such a mysterious disease may not disappear eventually in the same mysterious manner that it came?

It is certainly not a little humbling to think that the painstaking investigations and discoveries which have been made on the subject should have led as yet to no practical results.

The disease was at first attributed to the cold and wet by every cultivator of the potato; and although that may be only the indirect cause, it has always appeared to practical minds as the evil against which all preventive measures must be directed; and no discoveries which have been made, though they have made us more familiar with the characteristics of the disease, have altered this view of the case. If the rainfall is above the average at a certain time of the year, the farmer knows by sad experience that all hopes of a sound crop are at an end, and *vice versa*, if the summer is warm and dry. We never knew of an instance in which protection from the wet was afforded, either accidentally or otherwise, but the crop was good. The first instance of this kind which came under our notice was remarkable, as showing that dryness of the soil, whether that is secured by drainage or otherwise, is a preventive. In a quarter of potatoes which I had to do with, there grew a tree—an ash, if I recollect aright. It was a round headed tree, with a stem about 8 or 9 feet high, so that the ground could be cropped very nearly up to the stem. When the potatoes were taken up, they were very badly diseased, except those under the tree; and they, though smaller, were nearly every one sound. What with the shelter afforded by the branches, and the absorption of the moisture from the ground by the tree-roots, which were massed near the surface so thickly that a fork could scarcely be used, the soil was as dry and mealy as possible. Now there was no shelter here to speak of from anything but the wet, for owing to the height of the stem, the potatoes under the tree were exposed fully to the blast from the south, east, and west. I attributed the dryness of the soil chiefly to the roots of the tree. It is well known how surface-rooting trees rob the soil of its moisture. Since then, many instances of the same kind have come under our observation, as they must that of others. Last year, a farmer in this neighbourhood planted a quantity of Irish Rocks in a field where the soil was thin and dry. In October they turned out a sound and excellent crop. Part of the same lot was planted on the same formation, but in the hollow, where the soil was deeper and wetter, and they turned out

an utter failure. We went over a rather badly diseased field of potatoes last autumn, poking out the tubers we could see protruding above the surface of the soil; only one of these we found diseased, and not badly. Were it needful we could give many more instances, and also experiments, all proving that the wet is the enemy we have to contend against, and nothing else. Farmers and gardeners must of course crop the land they hold, but they should select the driest, and plant shallow. Would it not be worth while also, for farmers in those districts where the soil is poor and thin, to plant potatoes more extensively—turn potato-farmers, in fact? In such districts thicker planting could be practised to make up for shorter but sounder crops. We have seen a poor gravelly brae turn out a comparatively sound crop many a time when the rich meadow was a complete failure.

A good deal has been said at different times about the advantages of a change of ground. A gardener would not think of cropping the same quarter with potatoes two years in succession if he could help it; but how do the cottagers get on? I know many plots and allotments that have been cropped with potatoes year after year for more than ten years, and yet the crops, to my knowledge, are always first-rate, to say the least of them, where the ground has got an occasional liming and a moderate dressing of manure annually. As fine a patch of "Sutton's Flour Ball" as I have seen anywhere this season is in a garden which has been cropped with potatoes for nearly fourteen years. The soil is not a good spade deep, for it never was trenched.

J. S.



NEW OR RARE ORCHIDS.

THERE are now no less than seven hybrid Orchids in bloom in the Orchid-houses at the Royal Exotic Nursery, Chelsea, and they alone are a sight every lover of Orchids would travel miles to see. Every one, however, will not be able to do this, so in this paper I will describe them, adding a few details of their history which may not be uninteresting. They have been raised for the most part by the indefatigable Mr Dominy, who has devoted many years to the study of hybridisation as applied to this interesting class of plants. The result of his labours has been amply rewarded by the production of several of the finest Orchids in cultivation, amongst which we may here allude to *Cattleya Exoniensis*, perhaps the finest in the entire group, with many free-flowering qualities inherited from its parents, *Cattleya mossiæ* and *Lælia purpurata*. As an illustrative example of what it is capable of doing as a decorative or exhibition plant, I may be allowed to mention the noble specimen grown by Mr J. Anderson at Meadow Bank, near

Glasgow, and which has borne forty-four flowers *at the same time!* Imagine forty-four great rosy purple flowers nearly 5 inches across, each furnished with a gorgeous crimson velvet lip, the throat suffused with golden-yellow, and you have some idea of this magnificent hybrid. The latest novelty in the way of Orchids is another new hybrid *Cattleya* scarcely inferior to the last, but partly belonging to a different division of the genus. This has just been named *C. fausta*, and is a gorgeous beauty raised from *C. Loddigesii* and *C. Exoniensis* itself, a sure proof of the constitutional vigour possessed by the last-named hybrid. The sepals and petals of this new-comer—and most welcome addition to the list of hybrid Orchids—closely resemble those of *C. Loddigesii*, but in addition to being larger, they possess more of the rich rosy-purple tint peculiar to *Cattleya mossiæ* and *C. Exoniensis*. The lip is peculiar; its lateral lobes are pale, and shaped like those of *C. Loddigesii*, while the central lobe comes nearer to that of *C. Exoniensis* both in size, colour, and markings, being of a velvety-purple most beautifully marked, and golden-yellow in the throat. The flowers are now very fine, but doubtless as the plant develops itself it will astonish even its raisers in size and beauty of colouring. Another interesting hybrid *Cattleya* raised some years ago is also flowering, *C. Brabantia*, a cross between *C. Acklandia* and *C. Loddigesii*. This is a very interesting hybrid, the sepals and petals being shaped like those of *C. Acklandia* and most beautifully marked with dark-purple blotches, the margins of which shade off into a lovely translucent amethyst tint, similar to that seen in a good variety of *Phalaenopsis Luddemanniana*. The lip reminds one of the old *C. Forbesii*, being small and of a yellowish white colour.

We come now to a pleasing group of Lady Slippers (*Cypripediums*), the first to hand being *C. vexillarium*, an hybrid exactly intermediate in every particular between *C. Fairreanum* and the well-known *C. barbatum* or Bearded Lady's Slipper. Its petals are pendulous and curved exactly like those of the first named, while the standard or top sepal is green at the base tipped with pure white, and striped with purple and green lines like *C. barbatum*. In habit, the plant throws out its leaves horizontally like *C. Fairreanum*, and has them variegated, although not so decidedly as its other parent the Bearded Lady's Slipper. Another, *C. Harrisianum*, is a hybrid between the last named (*C. barbatum*) and *C. villosum*. It is a strong grower, stronger in fact than either of its parents, having fine fresh green foliage marbled with darker green. Its flowers are as large or even larger than those of *C. villosum*, and are darker coloured, although the bright varnished appearance of the latter is preserved. This is a remarkably free bloomer and keeps on growing and flowering all the year. It should

be introduced into every collection as one of the best and freest of all Cypripedes. *C. sedeni*, described before in these pages, is still flowering, as also is *C. Ashburtoniæ*, a seedling raised by Mr Cross, gardener to Lady Ashburton, after whom it is named. It is the result of a cross between *C. barbatum* and the old free-flowering *C. insigne*. Its flowers are very ornamental, and the plant inherits the constitutional vigour of its parents. In addition to those already named as having been flowered in the Royal Exotic Nursery at Chelsea, we may mention the following:—*Calanthe Veitchii*, *C. dominiana*, *Cattleya hybrida*, *C. quinquecolor*, *C. Sidneiana*, *Phajus irroratus*, *Anæctochilus Dominii*, *Ærides hybridum*, *Cypripedium Dominicanum*, *Cattleya Pilcheri*, *C. devoniensis*, *C. Dominiana*, and *C. manglesii*.

These results are satisfactory from a floricultural point of view, but they have served a higher purpose. Hybridisation and grafting are two of the great powers that the botanists of the future will rely on for determining the natural affinities supposed to exist between genera and species. The result obtained by poring over dead plants, crushed out of all the similitudes of life, health, and beauty, by drying, is mere guess work when compared with the demonstrative processes to which we have here alluded. In saying this much it is of course understood that systematic botany, or classification, is as yet in its infancy, and plants are placed in proximity and order according to the size, form, number, and arrangement of their parts only; but we hope to see the time when there shall be a closer bond of union between the gardener and the botanist, when the theory of the one shall be demonstrated either as correct or otherwise by the practical experiments and observations of the other, and then we may expect real good to follow for horticulture. I say this because the gardener has better opportunities of studying the life, health, and functions of a plant than the generality of botanists so called; and the physiology of a plant deserves due consideration before it is placed in a system along with plants which merely agree with it, as above stated, in number, form, and disposition of their component parts.

F. W. BURBRIDGE.



HINTS FOR AMATEURS.—SEPTEMBER.

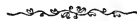
WHATEVER is to be done to improve the fruit-garden should have attention as early as possible. Moss-covered branches are great evils; scraping and washing with lime-water or brine will destroy the pest. Painting fruit-bushes with lime and soot does much to keep off bullfinches and insects. Soil taken from round the collars of Gooseberry and Currant bushes, and replaced with other material

in which is a quantity of manure, will in most cases keep caterpillar in check. Now is a good time to lift Currant and Gooseberry bushes. If they are lifted carefully, retaining all the roots, and well mulching them, they may carry a fair crop next season; but where they are doing well, we would say, let well alone; but often large plots of bushes are seen with the half of the ground vacant from deaths among the plants. Whatever planting is to be done, it should have attention as early as possible, so that the roots may get hold of the soil before the winter is fairly set in. Apricots and Peaches pay well by lifting. We have seen apparently worthless trees of the former lifted and replanted and become vigorous and fruitful, and not subject to dying off piecemeal. Late root-action in wet soils helps on this Apricot disease very much. If leaves are still clinging tightly to the trees, a light broom passed over them will help quantities off, and allow the action of the weather to help the trees to become matured. When fruit-trees arrive from the nursery, they should be planted at once: allowing them to stick in the ground by the roots till a convenient time arrives, is half-killing them. Mulch well with litter to keep out frost. Pruning and nailing must have attention as early as it can be done. Old trees and bushes may be improved by cutting out a quantity of old wood, and retaining fresh shoots to take the place of old branches. Keeping the centres of Apple and Pear standards well opened out is conducive to productiveness and good quality. How often large trees may be seen with heavy crops at the points of the branches only; the hearts of the trees being shut out from the sun, no fruit-buds can be formed. Trees a quarter their size may be seen carrying heavier crops of finer fruit when a little attention has been given at the right time with saw or knife. We object to severe cutting—only doing it when it is to be of service. A hundred Apples which we had from the nurseries last season as “Feathered” Maidens, were planted and scarcely touched with the knife; a few fruit were ripened, and the trees are now full of fruit-buds requiring nothing with the knife. These are hardy kinds to be kept as dwarfs. We have long looked upon the system of cutting young trees “hard back” as a bad practice. Raspberry canes may now be planted in deeply-trenched and well-manured ground. They do well in a cool position. They may be fastened to their stakes at once. Young plantations should be cut well back the first season. Strawberries may be mulched with good manure. It can be turned in lightly, but the roots of the plants should remain entire.

Lawns and pleasure-grounds should be frequently swept, the grass rolled, and worms kept in check by applications of lime-water. Leaves should not be allowed to remain in heaps on the grass. Beach and Oak leaves should be kept separate from softer kinds if they are

required for hot-beds. Walks may be coated with gravel, and kept smooth and firm. All improvements in the grounds, such as tree-lifting, shrub-planting, &c., may have attention now. When shrub-planting is done, it is a bad practice to give heavy soakings of water at this season, or treading heavy soil very firm to the roots when weather is wet. A good mulching over the roots after the soil has been carefully placed among and round them, will keep them safe from frost and drought if a dry season should prevail. It is necessary to keep all trees and shrubs from being shaken by wind till they get hold of the fresh soil. Clear off all dead plants from flower-beds, but while the foliage is green they will cover the earth; but if shrubs, ornamental Kales, bulbs, foliage plants, or annuals are to fill the beds, a clearance should be made at once. Cleanliness and order is very important during the dark days of winter. Plant Roses on good ground well trenched and manured. Place fresh loam with each plant as they are put into the ground and mulch them; branches stuck among the plants will help to protect them. Straw or hay ropes placed round Standards, especially near the union of bud and stock, is a good old system for keeping out severe frost. All choice Carnations, Pansies, Polyanthuses, Auriculas, &c., growing in pots are the better of being protected with a frame, &c. All bulbs should be planted as early as possible. Place red-lead over Crocus roots to keep mice in check. Keep all plants for forcing, however hardy, plunged in ashes. Shelter under glass is advantageous. Get a number of each kind into a gentle warmth. Lily of the Valley, early Hyacinths, Azaleas, Violets, and the usual favourites often referred to, will now claim attention; hard forcing often causes growth of foliage but no flowers. Let every plant which frost will injure be placed in safe quarters. Dahlias should be dry and safe. Chrysanthemums coming into flower may be assisted with manure-water; they should be kept well aired, free from a stagnant atmosphere. When watering is done, let no unnecessary water be spilt; dry up floors with a mop. A little fire-heat will be beneficial. High temperatures are not desirable. Greenhouse plants do well with 45°, and a rise with sun-heat. Stove-plants are safe at 55° as a night temperature.

M. T.



FLORIST FLOWERS.

THE TULIP (*TULIPA GESNERIANA*).

IN structural completeness the Tulip may be considered a masterpiece of finished simplicity—a plant of imposing bearing, were it only green instead of being the most gaudy of Nature's painted cups, stamped with colours of intense and polished brilliancy. Justly was it entitled to the

honour of being considered the gayest of gay flowers in the early times of horticulture, when comparatively few of the grand tropical beauties had been introduced which now adorn our plant-stoves and conservatories. What wonder that this dazzling queen should captivate the enthusiast, and that her attractive power should pervade and control the desires of horticulturists to a great extent; but that the rage to possess certain varieties should run so high in some minds is, to say the least, marvellous, if not an infatuation. 4600 florins, a new carriage, and a pair of horses complete in harness, is certainly an extravagant exchange for a single bulb. Nor do we think that person much less affected with what has been termed the "Tulipomania" who gave ten acres of land for a single root. Besides those quoted, the numbers might be multiplied to a long figure, showing the rage that prevailed for the possession of some varieties at one time.

The Tulip, a native of the Levant, was first introduced into Europe in 1559, and thence to England from Vienna some eighteen years after, where its culture was most enthusiastically pursued for a long series of years succeeding—the varieties meantime having swelled to an unknown number. The late Tulip is ranked into three great divisions or classes, which are determined under the following names—viz., byblœmens, bizarres, and reds or roses. Byblœmens comprise white grounds, marked with several shades of black, maroon, purple, or violet; roses exhibit on white grounds the various shades of red; while bizarres have yellow grounds marked with other colours. These three classes are again divided into what are termed "feathered" and "flamed" flowers. Feathered, strictly speaking, are those flowers which exhibit their secondary colours around the margin of the petals; whilst those designated flamed are considered so either with or without the feathered margin. What constitutes them flamed is the fact that the markings take their rise lower down in the petal, and generally branch or break into ramifications as they proceed upwards.

Propagation.—The Tulip is propagated by means of seed or by its offsets. Of the former we do not intend to speak. From "four to seven years" is a long time to wait to see them flower, and from "four to twenty years" rather long to wait to have it determined what are to be their ultimate markings.

Offsets should be planted as soon as separated from the mother bulb, choosing a situation dry and warm. Either plant them in beds or nursery-lines: First—after deeply digging the ground—drawing out a deep furrow, into which put a body of old cow-manure and fresh loam; then overspread a layer of sandy soil, on which plant the bulbs. Cover up with ordinary garden soil, allowing $2\frac{1}{2}$ inches of soil above the bulbs. A border is perhaps the best place to plant into: if

sloping suddenly from the wall to the walk all the better. As the winter approaches, the safety of the bulbs will be in a greater measure secured by covering with mats or dry litter, until they have established their roots in the soil.

Formation of beds, and planting flowering bulbs.—In the first place the beds ought to be lined off, and the soil, if not considered suitable, taken out 10 inches deep. Then manure the new-made surface, and dig down the manure. Then lay on a stratum of equal portions cow-manure, that has been in preparation by being stored up for a couple of years, and virgin loam, not too heavy. Lay on a body of this material 12 inches deep, and over this spread a covering of 3 inches of garden soil. In forming the bed it ought, when completed, to have the centre raised a few inches higher than the edges; and the whole—from the material added—will raise the bed considerably above the ground-level, which is required to assist in warding off a portion of the heavy rainfalls which are naturally to be expected during winter. Plant out the bulbs early in November, choosing a dry day for the operation. Commence operations by dressing the surface with a rake, preserving the rounded form of the bed. Line the bed into divisions 7 inches apart, and plant the bulbs along the lines at the same distance. Use for making the holes a dibbler rather blunt and rounded than one too sharp. Make the holes wide enough to afford the bulbs easy accommodation, and making insertions at the least 3 inches deep. Next drop in the bulbs, bases downwards, and cover them with a little sharp sand before finally filling in the holes with a general covering of $1\frac{1}{2}$ inches leaf-mould and sand. Conclude the business meantime by raking off neatly, and extending hoops across the beds to support a covering of mats, when it is necessary to apply them as a protection in severe weather.

After-culture.—It is as essential that the beds have the benefit of every ray of sunlight in the absence of frost as it is important to protect them in severe frost, wind, or rains. In short, avoid covering unless compelled through the inclemency of the weather. These directions comprise all that is required during winter and early spring, excepting stirring the soil when it inclines to being crusty, and keeping free of weeds.

When the buds begin to display colour, it is time to consider about an awning of thin canvas being placed over the beds, so that the blossoms may be effectually protected from sun and wind—at the same time, as a matter of course, making a provision so as to preserve free ventilation, that air circulate constantly among the plants. This canvas ought to be fixed on rollers, so that it may be effectually lifted off the plants in dull days. Finally, when the glory of the bloom is past,

remove the awning, and fully expose the plants to ripen, always being careful to dress away all the seed-pods before seed is formed in them. This will materially assist the swelling of the bulbs. Take up the bulbs as soon as the leaves are yellow, and spread them out to dry in an airy shed, where the sun cannot reach them. Sunshine is most destructive in its effects on newly-lifted bulbs. When thoroughly dry, detach the offsets and any loose skin, and store away in paper bags, with the name of the variety written in ink on the bag. If the bags used are stout brown paper, they ought to have their sides perforated to admit air. Occasionally overhaul the bulbs, and remove decayed ones, to prevent them communicating disease to others that are sound.

The following assortments are dissimilar, and superior late show kinds :—

Bizarres.—Heroine, Uranie, Hector, Fleur de Parade, Couronne Imperiale, Lucifer, Pallas, Lievin Bauwens, Duc de Malakoff, Duc de Russie, Trafalgar, Shakespeare, Cavaignac, La Nubile, Tromperie, and Pluton.

White grounds striped with violet.—Burrhus, Demonis, Othello, L'Inapproachable, Jacqueline, Madame van Houtte, Oswald de Lille, Blondin, Belle Virginie, Mina Hortensia, La Ville de Louvain, Rembrandt, Ma Confidente, Ma plus Belle, Globertine.

White grounds striped with rose.—Goliath, Noemi, Lord Clyde, Reine d'Egypte, La Circassienne, Marie-Louise, Vesta, Magnolia, La Beauté, Andromeda, Fortune, Nimrod, Surprise de l'Amateur, Leonard, Feu Brillant, Sophie, La Sultane, and Vesuvius.

Early Tulips for pot-culture.—Before proceeding to give a list of these, I think they deserve a few remarks in a cultural sense, although all those who have forced Hyacinths will be intimately acquainted with the mode of early Tulip-culture, in and out of pots. So we shall not direct our remarks to them, but rather to those persons requiring the information.

Some of the early Tulips are not at all stubborn, but are easily forced when not too suddenly and severely pressed by fire-heat. Above every consideration, allow the double-flowers to fill their pots with roots, and become acquainted with glass shelter, before putting into 60° of atmosphere-temperature. Tournesol, both the striped and the self-yellow, are the least shy. Avoid a too sudden transition from cold to heat in the early forcing period—but it is much better to proceed quietly, when one is not pressed for early flowers. It is of the greatest importance to early forcing to get the bulbs home as soon as they are imported, and have those wanted first in bloom potted without a day's delay, and put under the protection of glass, but without applying artificial heat for the succeeding six weeks. Water moderately,

after allowing time for the formation of roots ; and as soon as the pots are well supplied with roots and the crown started, they may be forced with success. Bottom-heat is not essential, although acceptable when a fair amount of fresh air can be admitted amongst them, and the pots staged near the glass, more especially after the plants have made some advance in growth. It is a great object to keep the plants as stubby as possible, and this can never be attained when staged at much distance from the glass. Besides these drawbacks to contend with, greenfly sometimes shows its presence uninvited, and, if allowed to stroll at pleasure uninterrupted, will soon make short work with them. A strong dose of tobacco-smoke is the only effectual cure for these pests, and they require strong measures to suffocate them ; but the Tulip will not suffer by a strong application of the "weed." Always smoke when the plants are dry in the foliage, and use the syringe freely the succeeding morning. In all else attend to as for Hyacinths.

The following are amongst the best for forcing early. First on the roll is Duc van Thol, single, both the old striped, the crimson, the white, and the yellow. Next the double of the same name. Close in succession follow Tournesol, a splendid full double red, edged with citron-yellow ; and Tournesol Yellow, canary yellow, with orange reflex. Rex Rubrorum is a magnificent ruby scarlet, but rather shy to rise so early as closely to succeed Tournesol ; still, when coaxed a bit, it makes a good figure and telling effect amongst other spring flowers. La Belle Alliance, single, a beautiful variegated, colour brilliant vermilion red ; without flowers, its golden-banded leaves are recommendation enough. Chrysolor is a capital pure single yellow. Pottebakker, single, white, a charming beauty : so is the striped form, which is golden yellow, variegated crimson. Vermilion Crimson, a single too, unsurpassed. Mariage de ma Fille, double, ground white, flaked cerise, excellent. Duke of York, double, red-edged nankeen. Agnes, double, very large and full, of a brilliant scarlet cast. Couronne des Roses, double, rose of glossy silk, texture magnificent. Luther, a double, violet-purple. Emperor Rubrorum, a brilliant scarlet, double.

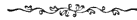
A. KERR.



THE LAMBTON BUNCH OF GRAPES.

WE have much pleasure in being able to give an illustration of the very remarkable bunch of Black Hamburg Grapes which Mr Hunter, gardener to the Earl of Durham at Lambton Castle, exhibited at the Manchester International Exhibition last September. It may be considered the most extraordinary bunch of Grapes for size that has been produced in this country, not excepting Speechly's 20 lb. Syrian, and

those immense Syrians of more recent date produced at the Edinburgh and Glasgow Internationals. We learn from Mr Hunter that this bunch is the product of a Vine struck from an eye in 1869. The Vine was cropped the second year and carried six bunches, one of which was among those with which Mr H. competed successfully at Glasgow last year. This year the Vine bore seven bunches besides the subject of our illustration, which weighed 13 lb. 4 oz., the lightest of the eight being over 4 lb. Our illustration is taken from a photograph, and is an exact representation of the remarkable bunch.



VICTORIA NECTARINE.

ALLOW me to call attention to this new and, I fancy, but little known fruit—a seedling raised some years ago by Mr Rivers of the Sawbridgeworth nursery. I have fruited it during the past and present year, and in both instances found its qualities to be such as to deserve extensive cultivation. A late kind, ripens during the end of September, and the beginning of October. I cannot say with certainty, but fear it will hardly succeed in the northern counties of Scotland, unless in favourable localities. Planted in a glass-cased wall it will succeed in any part of Great Britain. I have heard it stated more than once, that it has an aversion to fire-heat, and does not force well; it may, however, be put in a late house, where just enough heat is applied to exclude frost; but of this I have no personal experience.

The fruit is unusually large, averaging 4 oz. in weight, and occasionally in excess of that. The habit is vigorous, as that of most young trees is, but easily corrected. The shape of the fruit is a roundish oval, and rather pointed at the apex. When shaded by the foliage, it is of a light green colour, but when fully exposed, of a light orange and crimson on the sunny side. I strongly suspect this is a seedling from the Stanwick Nectarine, surpassing it in flavour, without splitting before it ripens.

The practice of proving the qualities of seedling Peaches and Nectarines in what are called orchard houses, is far from being an infallible method. The crucial test has yet to be made by the gardener under exposure, and not till then can we approach substantial facts.

ALEXANDER CRAMB.

TORTWORTH COURT.



NOTES ON HARDY FLOWERS.

Asclepias tuberosa (*tuberous-rooted Swallow-wort*).—This is one of the best of a very interesting and useful genus of hardy herbaceous plants. The swallow-worts are not often seen in flower-borders, yet they are well entitled to a place in them. They are not conspicuously showy plants, but far removed from being weedy; and the interesting structure of the flowers is a study in itself, and calculated to attract the thoughtful. All the hardy sorts are easily cultivated in ordinary garden-soil, but nearly all prefer a dry to a wet bottom. The sort immediately before us is particular in this respect, as it is very susceptible of injury from wet in winter. It grows about 18 inches high, with hairy, dusky-brown or reddish-brown stems. The leaves are alternate in the lower part of the stem, and opposite in pairs or in fours in the upper part. The flowers are bright orange-red, in terminal and axillary umbellate clusters at the extremities of the stems; they appear in July and continue till September. It is increased by division in spring, or in very early autumn, so as to give the divisions a chance of establishing themselves before winter sets in. It is most quickly increased by seed, which ripen in warm localities freely enough, and which should be sown as soon as ripe in sandy loam, in a cold frame, and they will germinate the following spring. Native of North America.

Pancratium illyricum.—This is a choice hardy border-bulb, rarely met with in collections of hardy flowers. It has a large black-skinned bulb, emitting many strong fleshy fibres. The leaves are about 18 inches long and $2\frac{1}{2}$ inches broad, and grey-green. The flower-stems are from 18 inches to 2 feet high, and are surmounted by an umbel of beautiful, pure-white 6-parted flowers, with a white, semi-transparent 12-cleft crown and conspicuously long stamens, also white. It flowers in June and July. Native of the south of Europe.

P. maritimum.—This is very similar in the character of the flowers to the last, and is in every way a very desirable plant to cultivate. The leaves are dark green, and shorter and narrower than in the last. A dry warm soil is necessary for both sorts, and it should also be deep. The last species is scarcely fit for culture out of doors in the north, except in the warmest localities, and both are the better for being protected during winter by a mound of tan or cinders, laid over the spots they occupy to exclude frost. Increase by removing the offsets, which are produced in moderate quantity, and by seeds, which both produce in favourable localities. The latter should be sown as soon as they are ripe in heat, and the former should be pricked into rich sandy loam and peat in nursing-beds early in spring or in autumn

when the leaves decay, protecting the beds during winter with some dry litter, tan, or any such material that is most handy. Cultivated in pots in pits during winter, they are very beautiful ornaments of the greenhouse in early summer.

Mirabilis Jalapa (*Marvel of Peru*).—This was formerly an immense favourite with flower-loving people, but now could hardly be found in a week's journey in gardens. Yet it is one of the most showy out-of-doors plants that could be named, and though not quite hardy enough to endure in all parts in the open ground, there is no considerable difficulty in keeping it, either by lifting the roots and storing them in-doors in winter, or by sowing seeds in spring. A plant of strikingly showy character such as this is, flowering also profusely for four or five months in summer and autumn, should be a general favourite; and no doubt it would be if some of our leading gardeners would only take it up and give it a fair chance of asserting its value as an ornament of mixed shrubby borders. It is very varied in the colour of the flowers, some being yellow, others red, purple, and white. There are two distinct strains,—one having purple and white flowers, the individual flowers on the same plant being either simple purple or simple white, or variegated with the two colours in the same flower; the other is the red and yellow strain, in which the flowers are variegated in the same promiscuous manner as in the other. The union of the two colours in the same flower is the most usual condition in both cases. The culture of *Marvel of Peru* is very simple. In southern warm parts, the seed may be sown in warm borders in March in the open ground without protection, but will start earlier, and consequently flower earlier, if a hand-glass is put over them, and they are well attended to with water. They should be transplanted as early as they are fit to handle, so as to conduce to the formation of plenty of fibrous roots. Sowing out-of-doors is not practicable in northern or cold parts; the plants will grow but very slowly, and flower so late that frost overtakes them before they have attained any degree of perfection. Sowing in pots in heat—say a nice hotbed, such as is employed to strike cuttings of soft-wooded bedding-plants and to raise seedlings of tender annuals—is the most satisfactory way of rearing young plants. The seed germinates quickly, and as soon as they are fit to handle they should be pricked off from the seed-pots into pans or boxes; or better still, they may be pricked into another hotbed, which need only, however, be a very moderately warm one, with a temperature of about 60°, and there they may remain till they can be planted in their permanent quarters in May. When they have taken root after being pricked out, they should be gradually inured to more air till they are fully hardened off, and so that short sturdy growth may be secured;

but they should not be exposed to sudden changes or to frosty winds. They will bear a good deal of cold after they have been hardened off, and be none the worse for it ; but the hardening must be gradual, not done by fits and starts. The middle or end of May is as early as they should be planted out. This process may be gone through every season if large numbers of plants are required ; but if only a few plants of large size are wanted, it is better to lift as many roots as may be wanted, and a few over to cover casualties in the autumn, and store them away in dry earth or sand, where they can be preserved from frost and wet. These may be brought out and potted in March or early in April, and will make rapid progress. The soil in which they are to be potted should be loam and well-decomposed manure, with sand enough to make the whole porous. Give water sparingly till the plants start growing, after which they will want copious supplies of it. A good growing temperature of 60° or 65° should be kept up till the plants have attained a considerable size, when they may be inured to a cooler atmosphere. Seeds ripen freely wherever the plant does well and flowers early enough, and as much should be saved as may be requisite for stock. A deep soil well manured, in a spot with a sunny aspect, is best adapted to grow *Marvel of Peru* in.

W. S.



FAILURE OF PEACH CROPS IN UNHEATED HOUSES.

SEVERAL cases of the failure of Peach crops in unheated houses have come under our notice this season. Considering the very sunless summer, and especially autumn, of 1872, in a great many districts such a failure is just what might have been predicted ; and any gardener who had it not in his power to apply artificial heat to his Peach-trees in the October of 1872, cannot reasonably be blamed for the want of fruit this year. Under such circumstances, the fruit-buds never get properly developed, nor the wood ripened. The foliage clung to the trees unnaturally late ; and when the time of blossoming arrived, not only were the blooms and their sexual organs weak, but the whole trees were in such a condition that the blooms were thrown entirely off before they set. This result is none the less likely to occur to Peaches in spring, on account of their being enclosed in a glass case, but the reverse. Hence in some cases there were outdoor crops, while in unheated cases there were none or next to none. Trees under glass are, from the effects of bright suns, more likely to be excited at a pace which outdoor trees are not subject to ; and the more violent the flow of sap, the wood-buds are more likely to take the flow and start into growth, while as a consequence, and at the same

time, the flower-buds are actually thrown off altogether, and the crops are thus lost. In the northern parts of England and Scotland, where there are less chances of thorough ripening, late Peach-cases should have some means of being artificially warmed, in order to ripen the wood in such autumns as 1872, and of this year also, when we have had such sunless and wet seasons. It does not matter how healthy the trees may be; no power at the command of the gardener can insure a crop if the buds and wood are not, to say the least, moderately well ripened. We saw several houses near the very centre of England where strong-growing Peach-trees had not produced any fruit, and from no other cause than that of the want of applying, or having the power to apply, fire-heat to ripen the wood and "plump up" the buds. And after the very sunless and wet season we have this year experienced over a great breadth of the kingdom, if like results follow, employers should not blame their gardeners unless it be where they have the means of firing the trees in autumn and have neglected to do so. Peach-cases should all be heated, to enable gardeners to cope with the effects of a dull season in the case of the Peach crop, as well as render such structures available for wintering half-hardy plants, in many cases where such accommodation is of the worst description.



COWAN'S SYSTEM OF HEATING HOTHOUSES ON THE COMPENSATING SYSTEM.

THE Editor has previously described the principles of this system in the 'Gardener' (see p. 245), and I now allude to the question after having seen the system at work on the 4th inst., under peculiar disadvantages, on the Marquis of Salisbury's estate at Hatfield. Mr Bennet, who now has the extensive and increasing gardening establishment under his charge, had resolved to adopt this system on principles of economy, and invited a party of gentlemen interested in Horticulture to visit the apparatus on its being started into work. The result of the trial was as successful as could be expected, although this at Hatfield partook somewhat of the nature of an experiment, owing to chalk being used along with the anthracite coal instead of limestone, which latter Mr Cowan finds the best for his purpose. This is the first time chalk has been employed with Cowan's apparatus, and we must compliment the inventor on the satisfactory result obtained. The kiln at Hatfield is about 12 feet wide, and from 12 to 14 feet high, the interior being egg-shaped, and containing a solid mass of fuel 10 feet high by 6 feet in diameter in the centre or widest part. Over this glowing mass of chalk and coal an improved saddle-boiler, designed by Mr Cowan, and manufactured by Messrs Hartley & Sugden of Halifax, is placed. The

characteristics of this boiler are its increased water-way, flatter span, and consequently more heating surface than is possessed by the ordinary forms of saddle-boilers now in use. All appears to be eminently fitted to the peculiar requirements of lime-kiln heating, and at Hatfield is connected with 7000 feet of 4-inch piping, nearly all of which was fully exposed to the external atmosphere at the time of the trial. In addition to heating this quantity of piping, it is expected to reduce the cost of fuel by producing lime for use on the estate. We took occasion to examine some of the lime produced from the chalk at Hatfield, and found it to be of excellent quality and quite free from cinders, ashes, or other refuse of combustion, which some imagined would deteriorate from its value. The pipes at Hatfield are on two levels, and the upper portions naturally monopolise much of the heat at the outset; still we think, when the kiln gets thoroughly into working order, there will be no difficulty worth naming, or that would not have attended the introduction of a boiler heated by any other system. It is a question whether 6-inch mains from the boiler would not have been better than the 4-inch pipes now used; but this may safely be left in the hands of Messrs Jas. Boyd & Sons, heating engineers, of Paisley, near Glasgow, who have supplied and fixed the pipes, and in addition have erected two new forcing-houses in a thoroughly substantial manner. Every new system is open to good-natured comment and straightforward criticism, and this we believe does more good than harm. The system appears to have special advantages, and we may briefly recapitulate these as being economy in the cost of fuel and labour, since the fire may safely be left for 12 hours without any attendance, when in fair working order. One difficulty is the length of time required to get up the heat if once the fire is allowed to get too low, but this is easily avoided if ordinary precautions are exercised. The management of the apparatus being essentially different to that of others, it follows, that any one who uses this system for the first time has many little wrinkles to learn in order to work it successfully: these once overcome, the affair appears simple enough, so far as our experience of the matter derived from our seeing the Hatfield boiler in operation extends. In concluding this short notice we wish the system and its inventor all the success they deserve.

F. W. BURBRIDGE.

GOLDEN CHAMPION.

FROM peculiar circumstances, which I will here detail, I am able to corroborate what Mr Simpson of Wortley, as well as the Editor of the 'Gardener,' describes as the treatment as to moisture in the atmosphere this Grape requires. In one of my long span-roofed vineries here there are four plants of the Golden Champion Vine. These houses have

an incline of 6 feet in the 200 feet, the lower ends of them bounded by a corridor, from which they spring ; the higher ends are exposed to the cold air ; and all acquainted with such matters will see at once that the hot air laden with moisture will draw towards the upper ends, and on coming in contact with the cold glass of the ends of the houses a great portion of the moisture will condense, and that the houses will be much damper there than towards the middle and lower end. In fact, the berries on the Vine or two next the upper end are every morning, before air is put on, covered with water, like dew on the grass, while the rest of the fruit is quite dry. Now it so happens that two Vines of the Golden Champion, one on either side, are the second Vines from this damp end, a Muscat being the nearest to the end. Farther down the house, and where the berries are never covered with dew, are two more Vines of the Golden Champion ; on these latter there has not been a spotted or defective berry, while on the two close to the end of the house more than half the berries have been spotted. In the case of the two Muscats next the cold end, many of the berries spotted also, and many shanked, not in the usual way of shanking ; the fruit ripened and then the shanks decayed, the fruit sweet, and not acid, as in the case of genuine shanking. Here, then, is a case where all the circumstances as to soil, climate, &c., are identical, with the exception that the moisture is in excess in the one case and not in the other, confirming the conclusions the writers I have referred to have arrived at—namely, that this Grape requires a dry atmosphere—that is, one not saturated with moisture ; and, I believe, the same may be said of all Grapes if they are to be produced of the highest quality, as to flavour especially.

On several occasions I have observed that a charge against this Grape and the Madresfield Court Grape was that the berries cracked just as they finished swelling. The Grape-grower who cannot prevent this has few resources. If, when the first berry gives way, the laterals on which the bunches are growing are half cut through, either by means of a pair of scissors or a knife, and the laterals that have no fruit on them are allowed to grow, there will be no more cracking of the berries.

WM. THOMSON.

TWEED VINEYARD, Oct. 13, 1873.



PLANTING FRUIT-TREES.

THE directions of the "Squire's Gardener" on planting fruit-trees are very seasonable ; and if I may be permitted to contribute my quota to what he has so well written on this subject, it will give me much pleasure. The principal fruit-trees in the kitchen-garden

here were Espaliers, planted at $2\frac{1}{2}$ feet from the box; many of them must have stood from the time the garden was first made, judging from the immense size of their trunks. The hedged-in appearance the quarters of the garden, it may well be imagined, must have had with these Espaliers presenting the appearance as of an unbroken hedge all round the borders, continued until about seven years ago, when I received the sanction of my employer to eradicate them, which being thoroughly done, the ground was trenched to the depth of $2\frac{1}{2}$ feet, this being done early in the autumn, as the old worn-out trees bore scarcely any fruit. The ground having stood for a time in order to allow it to subside before planting the young fruit-trees, and having made a careful selection of the most approved sorts of both classes—viz., Apples and Pears—the distances were measured off, beginning with the first tree at $3\frac{1}{2}$ feet from end of border, and $4\frac{1}{2}$ from box in front of border, and 9 feet between each tree. Before planting a stake was driven firmly into the ground, to which the tree after planting was secured. The arrangement followed was to plant first a dwarf Apple tree, and next a pyramidal-trained Pear, and so on alternately. The manner of planting has been as follows: no pits were made, the roots were carefully spread on the surface of the soil, and maiden loam, of which we happened to have a good stock in reserve, was employed in the planting to about the depth of 6 inches; on the top of this an inch or two of well-rotted manure was laid for mulching, and this was covered with a thin sprinkling of soil. All the planting was finished before the end of November. The following season some of the trees carried fruit, and ever since nothing could be more satisfactory than their growth and crops of fruit. The growth of wood each season is moderate but well matured, the fruit-buds being very plump. The borders are never dug with a spade, but annually get a gentle forking over with a steel digging-fork. The mounds round the trees, where the great mass of roots is, are never disturbed. The character of the soil is strong stiff loam, having a considerable proportion of clay. I am strongly of opinion that were these trees grown upon the old principle of planting in pits, they would by this time be showing undoubted symptoms of canker in the wood; as with scarcely a single exception the fruit-trees in the orchard are affected with it, the character of the soil being much of the same nature as that of the kitchen-garden. If it were not for the fear of trespassing too much on your valuable space, I might give you an example or two of the productiveness of these trees. Out of 35 varieties of Apple, Sturmer Pippin, of which I have two planted, are the only weakly ones, and of 23 varieties of Pears all are vigorous.

H. R.

BEDDING PLANTS IN THE WESTERN ISLES.

IN common with most garden establishments in these days, a portion of the flower-gardening here is represented in summer and autumn on the bedding system, or grouping half-hardy and tender plants in beds and borders. Although by no means either on a modern standard respecting materials, or on an extensive scale, still a few general remarks on the growth and flowering of the plants chiefly employed, may not be inappropriate in a corner of your instructive serial. The site of the garden here was a few years ago one of the worst of quags, on which the subsequent formation of a horticultural establishment seemed most unlikely. Being, however, the only position available in the desired locality, it was ultimately decided upon. Thorough drainage, diligent cultivation, and liberal manuring, have since wrought wonders, and now the land yields excellent crops of vegetables, particularly Carrots, Onions, Asparagus, Peas.

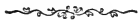
But I find I am deviating from my intended notes on bedding plants: and to begin with Geraniums, I am sorry I can report little in their favour as far as my experience with them the last two seasons is concerned—at least, excepting those varieties grown for foliage only. Up to the end of August last, scarcely a flower made its appearance, and the effect of the sprinkling with which we have since been favoured has been largely counterbalanced by rank foliage. Hitherto the plants turned out have been cuttings struck the previous autumn; but such a system I apprehend to be unsuitable, as flowerless plants appear to be the invariable result. The method of which I am sanguine of better securing the flowering of the plants, would be to grow them in 6 or 7 inch pots the summer previous to that in which they would be required for bedding out. It might reasonably be expected that such a practice would result in counteracting strong growth, and induce a flowering disposition. This certainly involves extra labour, watering, &c., which in places where planting is done extensively is a consideration; but though fewer plants were used, they would be more satisfactory than double the number of comparatively flowerless ones. I am of course referring specially to soils of a very rank character, such as have to be contended with here. My attention was more particularly drawn to this lately, in connection with a few Clematises planted last spring. One of these, a strong plant of *Jackmannii*, had up to that time been restricted to pot-culture; but with the view of prolonging its display of blooms, I resolved to have it planted out. It was accordingly planted against the low wall of a plant-house along with some five others, which were young plants in $4\frac{1}{2}$ or 5 inch pots. The result is, that with the exception of one strong plant of *Rubella* which is yield-

ing a few blooms, they are growing vigorously and have little appearance of flowering, while the old plant of *Jackmannii* in question has bloomed profusely for some time, and is as like flowering as ever : so that the object of its outdoor culture has been fully secured. *Heliotropes*, I find, bear much the same character as *Geraniums*, and are of little account either for cut-flower or border display. A liberal application of rough sand, well incorporated with the soil in the beds where they are to be planted, I am hopeful will effect an improvement. *Verbenas* last year (1872) did not begin flowering till September. I attributed the fact of the plants being all spring-struck as coinciding with the dull wet season we experienced in postponing their flowering, and accordingly last year propagated all the plants required in the autumn instead of spring. This year flowering began about the middle of July, and for the last six weeks has been in profusion. This has not been at the sacrifice of fresh young shoots for propagating material, as is sometimes the case with autumn-struck plants, for these have also been abundant. *Verbenas* prove by far the most satisfactory outdoor flowering-plants here. Besides the cut-flower supply being more plentiful than from any other source, they yield a display of bloom till far in the season, the early frosts rarely assuming such severity as to do them permanent injury. The sorts which are found to succeed well in regard to climate, &c., are old *Scarlet Defiance*, *Purple King*, and *Snowflake* : the latter has not such a straggling habit here as I have frequently seen it assume. Judging from the vigorous growth the sorts named make in this soil, I have concluded that fewer plants might suffice to cover the ground than are frequently used, unless the season proved unusually dry. Planted about 12 inches apart, and pegged out as far as could be done, the growth, besides covering the ground, averages 18 inches high : in this way they would of course be unsuitable for front lines, if such should be the desired arrangement. Passing on to *Calceolarias*, I find the cool moist bottom the deep peaty soil affords to suit them to a nicety ; and planted out in a growing condition—that is, without being coddled—they give lasting satisfaction. They are much exposed to wind, which when it prevails is generally of no ordinary force ; therefore timely attention to staking is particularly necessary. The worst of these storms I ever experienced here, or in fact elsewhere, was on 26th July 1872, from due east, when some of them were all but torn out by the root. The foliage even of *Turnips* was blackened as if by frost, at the same time. A valuable shelter has since been provided by the erection of a substantial high wall, which effectually breaks the east and north-east winds in particular, and proves highly beneficial to flower-gardening generally. Regarding varieties of *Calceolarias*, none

we have tried surpasses old *Amplexicaulis* for effect; indeed it is the only variety that claims special observation. I was surprised on being informed recently it had been discarded in some districts, as where it does well, as it certainly does here, I consider it a most telling variety; and if the plants are judiciously arranged, their massive spikes of bloom impart tone to a whole border. Golden Gem is also well worthy of a place, being evidently capable of doing its part in the roughest weather. A bed of it has for some time been a thicket of bloom, and, from the continual appearance of buds, appears to be but beginning. The crimson and dark sorts, such as *Ambassador*, *Garibaldi*, and others, we reserve for pot-culture, as they were not found to be satisfactory for bedding, on account of the damage they sustained in stormy weather. Probably I may already have made too great inroads on your valuable space, and may send notes on other bedding plants here with your permission on a future occasion.

D. MACKIE.

ISLAY.



THE GRAPE VINE.

VINERY FOR LATE GRAPES.

HAVING shown that a lean-to vinery facing due south is the best form for early forcing, under this head I have no hesitation in saying that for the same reasons that I have recommended the lean-to for winter forcing, when the sun is only a short time above the horizon, the span-roofed vinery running north and south is best for the ripening of Grapes, say after the middle of July. A span-roofed house in this position gets the benefit of sunshine longer in summer than does the lean-to. The east side gets the morning sun, at noon the whole roof is exposed to it, and on till late in the evening the west side is exposed to the sun, when it would merely be shining on the end of a lean-to. Besides this, a span-roofed house, from 20 to 24 feet wide, encloses a larger volume of air than a lean-to of the same width, and this is of much importance in Vine-culture. In large airy houses Grapes are better flavoured, are more fleshy, and consequently hang better through the winter. After considerable experience in Grape-growing in lean-to houses, ranging from 6 feet wide to what may be termed large airy vineries, I unhesitatingly recommend that they be built large and roomy. Besides the reasons already named, large vineries can be fired to a given temperature more steadily than small ones, because a large volume of air is not so easily influenced by external variations of temperature, just the same as a thin wedge of iron is sooner heated and sooner cooled than a thick one. Fig. 18 represents a span-roofed vinery of the dimensions I recommend for ripen-

ing Grapes late in summer and autumn to hang through the winter.

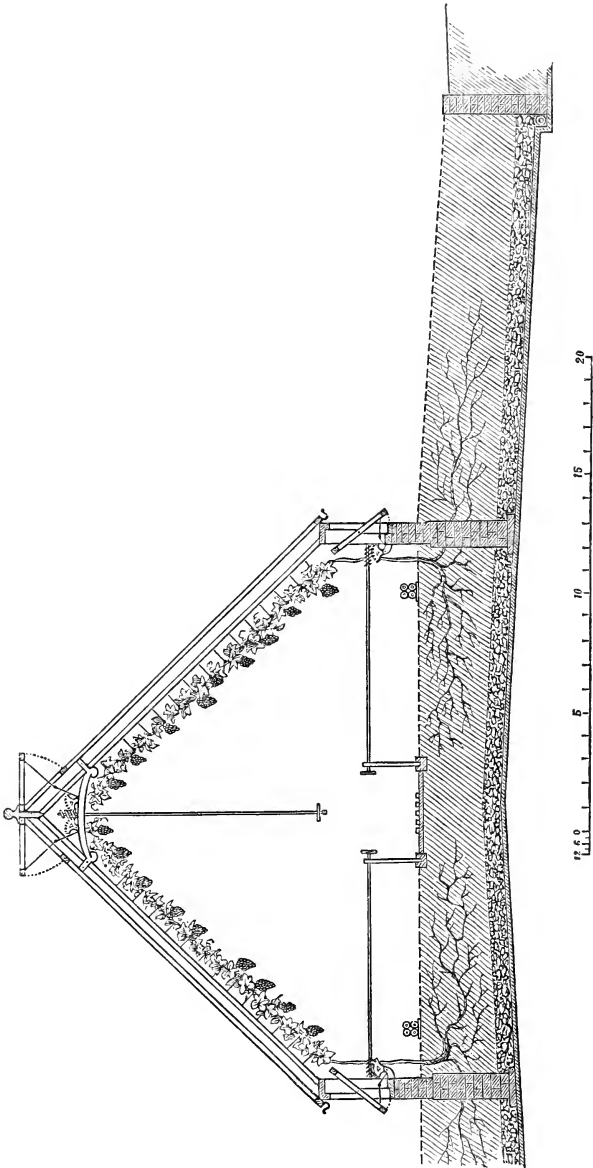


FIG. 18.

A drain runs in the draining material from the front to the back of the border, terminating in an upright shaft just below the hot-water

pipes at the back of the vinery and at the front of the outside border, thus communicating with the external atmosphere and that of the vinery.

These drains should be constructed 6 feet apart the whole length of the border, and be open-jointed, so that the air from them can find its way right and left among the open rubble, which should form the lower stratum of the drainage. This is for the purpose of what has been termed aeration, which means the exposure of the soil to the air from under-currents. No doubt, for summer forcing, it is beneficial, especially in wet climates, to open the mouths of the upright shafts in hot sunny weather, thus admitting warm air underneath the border.

It is a very common error to fix the wires to which the vines are tied too near the glass; they should be not less than 16 inches from the glass, to allow a free circulation of air between it and the foliage.

It is scarcely necessary to point out the evil of having the foliage in close contact with the glass. The wires should be fixed at 1 foot apart.

DRAINAGE.

The first thing that should be thought of and most effectively secured in the making of borders is drainage; for however great the skill otherwise brought to bear on the after-management of the Vine, first-rate results need not be looked for if the roots are subject to stagnant water. One of the most important points in successful Grape-growing, is the preservation in winter of the young roots made in summer, which is impossible if the border is subject to stagnant water. Of course the extent and character of the drainage necessary has to be determined by the position of the vinery, the nature of the subsoil, and to some extent by the average amount of rain which is peculiar to the district. The amount of drainage necessary on the retentive clay of such as Middlesex, or in the Lower Ward of Lanarkshire, the Dumfries or Argyle coasts, where so much rain falls, would be superfluous on the rocks of some parts of Somerset, or on the generally dry soils of East Lothian. By these conditions should also be decided to what extent borders should be elevated above the natural ground-level.

In preparing the site and drainage on damp retentive subsoils, let all the natural soil be excavated to the depth of 4 feet from the bottom of the arches or lintels at the front of the vinery, and supposing that the outside border is to be 20 feet wide, give it a slope of 18 inches to the extremity of the border. The site for the inside border should be sloped to the same extent, upwards in the case of a lean-to house, to the back wall. Lay down a layer of concrete, 3 to 4 inches thick, over the whole site of the border. Run a main drain parallel with the

border at its extreme front, and 6 inches below the lowest level of the concrete. In order to make sure of the most perfect drainage, lay tile-drains at right angles with this main drain, up to the back of the vinery, at every 8 feet. Over the whole surface of the concrete, and covering the tile-drains, spread a layer of broken bricks, road-metal, or round gravel with all sand sifted out of it, to the depth of 8 inches. Finish off with a sprinkling of smaller gravel, and a turf, grassy side downwards, over the whole surface. The site is thus ready for the border. The slope of the site, and soil, drains, &c., can be seen at a glance in fig. 18.

On what may be termed healthy gravelly subsoils in dry localities, where water neither stands nor rises, such extra care in drainage is not absolutely necessary. But where there is the least chance of there not being a ready and immediate escape for water, no hesitation should ever be allowed as to the necessity of draining as has been directed. I have never seen Vines do well in wet, and as a consequence cold borders, and know of instances where wet and unproductive borders have been rendered fruitful by perfect drainage. Although the Vine in a growing state requires much moisture, it will not put up with stagnant water at any season.



CALCEOLARIAS.

COULD you or any of your numerous correspondents assign the cause of our Calceolarias going off since being planted out? *Aurantia multiflora* was planted out with balls four inches square, and well watered before the holes were finally filled in, and to all appearance plants could not have been more healthy; but in a few days after being planted, they commenced to drop off in twos and threes, and still are going, and if they continue going at the same rate, there won't be one left before the end of the season. Upon minute examination no trace of any insect can be found. The disease seems to affect the plants first at the junction with the roots and the stem, and then spreads both ways in a white mouldy decay.

The first appearance of the decay is seen in the plants flagging, and in a few days after they die right out. Full-grown plants drop off daily in this way.

Last season we lost all Prince of Orange, and a few *Aurantia multiflora*. Most of the dark varieties have suffered severely too.

The disease (if it can be called such) has swept some of our neighbouring places nearly clean of Calceolarias. A. KEMP.

KEITHOCK.

[Yellow Gem is less subject to die in this way than any other we know.—ED.]

THE LUTON HOO CUCUMBER.

AMONGST the many new varieties recently introduced, I undoubtedly consider the Luton Hoo to be the nearest approach to perfection; far surpassing either Marquis of Lorne, Blue Gown, or any of the others we have heard so much of. I have grown nothing else but the Luton Hoo this season, and no variety can approach it either for the table or for exhibition, it bears so continuously, almost all the year round, is of very large size, symmetrical shape, dark green colour, and carries a beautiful bloom. The judges of the Royal Horticultural Society, who awarded the Luton Hoo three first-class certificates during the season of 1871, were certainly correct in their judgment; and I believe Dr Hogg thought it the best of the year. It will, I am sure, be largely grown next season. I inclose you a brace for your editorial verdict.

Scio.

[The brace received were most handsome, and excellent in flavour.—ED.]



ALPINE PLANTS FOR WINTER BEDDING.

THE person who does not admire the great majority of hardy Alpine plants is not to be envied, for he debars himself from one of the most beautiful and interesting fields of study and observation which the flora of the world affords. That these, in most instances, tiny gems are coming more into notice, is certainly a matter for congratulation. Besides much else that can be said for a great many of them, it can be said that as the freshness and beauty of other hardy flowers decay, the freshness and charms of many of the Alpine plants are most conspicuous at the "fall of the leaf" and downwards through the winter. In whatever way they are arranged or grown, they are always objects of great beauty and interest. A well-arranged collection of Alpines, whether in pots, in a mixed border, or on a properly-constructed rockwork, is sure to give much interest to their votaries every day in the year. And these are common enough ways of cultivating and arranging them, and not a word can be said against them. But the use of these gems as carpeting or bedding plants is as yet comparatively rare. We are, however, convinced that their extreme attractiveness when so used—in groups and in quantities together—is not so well known and appreciated as it should be, and it only requires a few striking examples of Alpine bedding to commend this system of planting them to all lovers of winter gardening.

Indeed it would seem that, from the way nature nurtures these lively plants, to cultivate them in large surfaces is the correct way of bringing out their striking beauty to perfection. Look, for instance,

at a small morsel of some of the glaucous Sedums and beautifully-in-crustured Saxifrages, and then go and view the same plants by the square yard and see how very much more striking they look the one way as compared to the other. And this is exactly how they show themselves in their natural condition.

We would advise some of our readers who have a series or group of beds not very large in their gardens, to try the bedding of these gems after the following method. Suppose a circular bed rising somewhat cone or globe shaped to its centre. Let the first ring next the box or grass edging be of *Sedum dasyphyllum*, the second ring of *Saxifraga rosealaria*, the third of *Sempervivum californicum*, the fourth of *Arabis lucida variegata*, the fifth of *Saxifraga longifolia vera*, and the sixth or centre of the bed be *Saxifraga ceratophylla*. The rings formed of these should be a few inches in breadth; and seen in such breadth, and in concentric rings, their individual beauty is much more conspicuous than when mixed up in small patches with other plants. This is just one example of scores of combinations and plants that could be adopted. Then for carpeting, how charmingly beautiful is a carpet of *Sedum dasyphyllum* or *Sedum acre aureum*, or *Thymus tomentosus*, or *Saxifraga glabra*; *Veronica repens*, *Veronica alpestris*, *Perinaria glabra*, and many other beautiful dwarf spreading plants which will occur to the minds of all acquainted with Alpine flora, and which supply colours almost as varied as the summer bedding plants, and aspects of vegetation far more chaste and interesting! Take, for instance, a bed covered densely over with the quite brownish grey, edge it with *Saxifraga rosealaria*, or *S. incrustata*, or even *Sedum acre aureum*, and dot the centre or body of the bed, at intervals of 8 or 9 inches, with large well-developed plants of that gem among Saxifrages, *S. longifolia vera*, and there will be produced a bed that must look charming the whole winter, or indeed the whole year. This is another combination only indicative of what can be done with the family of hardy Alpines in the way of grouping.

Then for dressing the surface of beds in which Hyacinths, Crocuses, Tulips, &c., are planted for early spring-flowering, what could excel as a beautiful carpeting, or what could show off bulbous flowers to more advantage, than the dwarf plants named above, and scores of others which might be mentioned? If these plants were difficult to propagate or keep, we would hesitate to recommend them for such a purpose; but most of them are so easily managed, and propagate so rapidly, that they can be grown in breadths in any out-of-the-way corner, and many of them lifted in great tufts and planted with the greatest ease, and without any check or injury to themselves. The low, dense-growing, surface-rooting Saxifrages, Sedums, and Veronicas,

Antennarias, &c., should be planted on a few inches of soil spread over a hard surface, and when required, as indicated above, late in autumn for planting and carpeting, they can be lifted without check in any size or shape of tufts required.

Beautiful as are Alternantheras and other plants used for summer carpeting, we do not consider it any disparagement to such plants to say that they are not nearly so interesting to an observant mind and eye as are these gems of beauteous hues and more beautiful construction, which, in addition to their beauty, are so hardy that they put on their best dress as other plants uncliothe themselves of foliage and flowers. We hope our readers will be induced to try this style of grouping or planting Alpine plants, and that they will report on them in due time. It is a system of hardy gardening which only requires to be begun to become one of extreme interest and beauty. D. THOMSON.



PHYLLOXERA VASTATRIX.

A CAUTION TO IMPORTERS OF PLANTS FROM FRANCE.

A SHORT time since a correspondent sent us specimens of Vine-leaves taken from Vines which had been planted last January, and from which the foliage was dropping off yellow and prematurely, and the Vines dying. On examining the leaves we found them to be one mass of the breeding-galls of this destructive insect. We at once advised the destruction of the Vines and the stamping out of the pest without delay. The insect was found swarming on the roots, as has been described in the 'Gardener' for January. In answer to some questions about the history of these Vines, we are informed that a quantity of Roses and Carnations were received from France in frosty weather, about the beginning of the year, and when they were unpacked they were laid in a quantity of soil on the potting-bench, close to where the Vine-eyes were from which the young Vines were to be reared, and after they were rooted they were potted in the soil in which said Roses and Carnations were located for a time. There cannot be any doubt that the Phylloxera was thus imported direct from the Continent in connection with the Roses and Carnations, and we thus notice the case to put others on their guard against any similar risk.



EDINBURGH INTERNATIONAL SHOW FOR 1875.

OUR readers, we are sure, will have noticed with pleasure that the Caledonian Horticultural Society have determined to hold another great show in 1875. Judging from the very great success which has attended the two previous great shows which have been held in Edinburgh, there is every reason to expect a

grand display in 1875. It was Edinburgh which first inaugurated a more than usual liberal scale of prizes, and distinguished itself for efficient management and the generous treatment of judges and visitors; and we have no doubt this will not be forgotten on the forthcoming occasion. It is now an established fact that it is only where liberal prizes are offered that great and successful horticultural shows can be looked for. We need only point to Edinburgh, Glasgow, and Manchester for proof of this. In 1862 we wrote as follows: "There is ample room and means too in Edinburgh for one well-worked society, but not for two. A financial condition which would enable a society to offer liberal prizes, with united and cordial effort, is wanted more than anything else. Some may be inclined to say that this money view is sordid and unworthy, and that the love of gardening, and the honour of gaining prizes, however paltry, should secure good exhibitions; such, we venture to affirm, will never be the case, at least for any length of time. Reduce the prize-lists of the London great societies to the same figures which have been hitherto offered in Edinburgh, and we would very soon cease to see and hear of their great displays of plants and fruits. On the other hand, raise the Edinburgh prize-lists to something like those of London, and a very little time will suffice to bring as fine flowers and fruits to the exhibition benches as is usually seen in the south." The above supposition has, to a very great extent, been realised, and the results are exactly as then predicted. To have good shows, we must have good prizes; and in the case of fruits especially, Edinburgh took the lead, and we have no fear of a relapse.

NOTABLE PLACES.

GLAMIS CASTLE, FORFARSHIRE.

THE seat of the Right Honourable the Earl of Strathmore is situated a little more than one mile from the Glamis Station on the Caledonian Railway, between Perth and Aberdeen. A few minutes' walk brings the visitor to the ancient entrance-gate. On entering the approach, which has a fine curve to the right, I passed through an extensive and richly-wooded plantation. Here I found many specimens of the finest varieties of Pines and other ornamental trees and shrubs studded along its banks, and thriving most luxuriantly. On emerging from this plantation, I also came to a very ancient bridge, which spans the river Dean. On moving a little further on, the visitor passes some old Lime-trees, and, turning to the right into the main approach, which runs nearly a mile in length in a straight line due south, the eye rests on a beautiful and extensive lawn, on which the hereditary and magnificent baronial castle and seat of the Earls of Strathmore stands, interesting on account of the elaborate style of its architecture and the historical associations connected with it. The visitor should go a few hundred yards south on the main approach, and, looking back, he will then have some idea of the grand proportions of the castle; and should he be fortunate enough to get a peep inside, he will find much to interest him in the internal arrangements, and in many family relics of great antiquity. Glamis Castle bears date A.D. 1080, and was frequently the residence of the Scottish kings. It contains a curious monument of the peril of feudal times, being a secret chamber, the entrance to which, by the law or custom of the family, must only be known to three persons at once—viz., the Earl of Strathmore, his heir-apparent, and any third person whom they may take into their confidence. The immense thickness of the walls shows

the extreme antiquity of the building. The great hall in the castle bears the date of 1621, and is a magnificent apartment, with arched ceiling, and contains some exquisitely-carved furniture, and portraits of Charles II. and James VII., &c.; also those of Graham of Claverhouse and the Duke of Lauderdale. A stair of 143 steps leads to the top of the castle, from which the views are both extensive and varied. Looking westward, at a great distance is seen the beautiful and conical form of Schiehallion (3547 feet high), a mountain which is said to have afforded refuge to King Robert the Bruce after the battle of Methven; to the north the eye takes in the whole range of the Grampian Mountains, and on their southern slope are seen the thriving towns of Blairgowrie, Alyth, and Kirriemuir, Mount Blair, and the beautiful Craigs of Clova; to the east again is seen, about six miles distant, the county town of Forfar; and direct south, about one mile distant, stands the village of Glamis, before the manse door of which there is a large obelisk called King Malcolm's gravestone, and tradition has it that he was buried here. At Glamis Castle (a name known to all readers of 'Macbeth') there is a sun-dial of a very curious character. Four carved stone lions stand on a base, each holding a dial as a shield; the names of the months and days are engraven below. Between and above the lions, in a kind of pyramidal or obelisk arrangement, there are no fewer than eight dial-faces cut diamondwise on the several blocks of stone. Every one of these must have been the work of much calculation, to see that the markings bore a proper relation to the plane of the surface. Some among them could have only shown a few of the hours just after sunrise or just before sunset on and near the longest day. This dial is in a fine state of preservation, and bears the date of 1621. The Earl of Strathmore is now looked upon as one of our most ardent patrons of horticulture, and a visit to Glamis and its magnificent gardens will be sufficient to convince the most fastidious. His lordship is also a keen arboriculturist, and plants out annually by the hundred thousand. I may mention that Lady Strathmore takes great interest in everything connected with the schools and the education of the young on their vast estates. Lord Strathmore is also a most considerate landlord. In the time of the rinderpest, in no part of Scotland was the disease more prevalent than on his lordship's estates in Forfarshire, and on rent-day he gave to each of his tenants equal to the half of his loss, so that, in many cases, instead of receiving he gave away; and in appreciation of this kindness on the part of his lordship, his tenantry presented him with a beautiful oil-painting of himself. But as this is more of a horticultural holiday, after viewing the castle we trace our steps towards the garden, which lies about a quarter of a mile to the north-east, and is approached by a private walk, which runs in a straight line till a small stream is reached, crossed by a neat wooden bridge, when the walk curves gently to the left. Here the visitor enters the Pinetum, before describing which I may mention that the park here is upwards of 1000 acres in extent, studded with many beautiful trees of great size, especially oak and ash, many of the trunks being 3 feet in diameter.

The Pinetum is of considerable extent, and most of the kinds planted out are in a healthy condition, although not of any great size as yet. Conspicuously among them I noticed *Picea nobilis*, *Lobbia*, *Nordmanniana*, and *magnifica*; *Abies Douglassii*, *Menziesii*, *Alberta*, and *Candidissima*; *Pinus Austriaca* also seeming quite at home here.

From the southern end of the Pinetum a fine view of the garden is to be had. Following on the walk above mentioned through the Pinetum the river Dean is crossed by a very handsome bridge, after crossing which the flower-gardens

are reached. On either side of the central walk there are two very pretty flower-gardens laid out; to the north of these there is a sloping terrace, and on the top of the terrace there is a walk which runs parallel with the garden wall. From this walk a fine view of the gardens below is obtained, and the tracings of every figure are seen. As the design is a very pretty one, it has a fine effect even in winter. I may mention that the river Dean forms the southern boundary of these gardens, and adds an additional charm to them.

I found the flower-garden bedded out with the usual bedding-plants, all in fine flower; but there were two beds that struck me as being rather out of the usual, which I think worth mentioning. These were filled with *Echeveria metallica*, *Dactylis glomerata*, Mrs Pollock, and edged with *Lobelia speciosa* and white Fairy Queen Geranium. To the north of the flower lies the kitchen garden proper, of about 6 acres in extent, with a gentle slope towards the south. From the southern end this garden has a very pretty appearance, as the walks are of good breadth, and ribboned on each side. From the central one is a clear view throughout to the back divisions of the houses.

Passing through, I found the walls covered with the usual fruit-trees, and mostly all in a fine bearing state. Plums, Apples, and Cherries are here most depended upon—Pears, Peaches, and Apricots being apt to suffer from the early frosts. I understand it is in contemplation to cover the Apricot and Peach walls with glass. The soil of Glamis seems very suitable for the cultivation of small fruits, of which there are abundant crops annually; also vegetables of every description do remarkably well. The main range of glass-houses here is 410 feet long, and averaging 17 feet wide and 19 feet high at the back, subdivided into ten divisions. Entering from the west, the first division is a late Peach-house, with fine healthy trees and an excellent crop. The second a late Vinery, planted chiefly with Lady Downes, and samples of Royal Vineyard, Alicante, Madresfield Court, Raisin de Calabar, Mrs Pince, and Muscat of Alexandria: a very heavy crop all over the house. No. 3. Late Hambro'-house, with the exception of a Golden Champion, Burcherds' Prince, Duchess of Buccleuch, and Mr J. Strange; but very appropriately Mr Johnston is replacing the latter with Mr Thomson's new Duke: heavy crop in this house, and well coloured. No. 4. Muscat-house, with samples of Buckland's Sweet-water, Morocco, and Chasselas Napoleon, the latter a fine-looking light amber-coloured Grape, and a good keeper; heavy crop and large bunches of Muscat of Alexandria, several of the bunches weighing over 7 lb. No. 5. Plant-stove, well filled with a useful and varied collection, including very handsome specimens of *Pandanus Van der Meichen*, *utilis*, *Veitchii*, and *Javanicus*, &c., all of which are largely used in a small state for table decoration; also young Palms, Marantas, and Caladiums in profusion. Here are *Allamandas*, *Clerodendrons*, *Stephanotis floribunda*, *Rhynchospermum jasminoides*, all growing on trellises, and flowering with great luxuriance. I was informed that it is contemplated to remove the plants in this house to other quarters, and have it converted into an early Vinery. This is a step in the right direction, as stove-plants are by no means desirable companions for Vines, and should always be separate from fruit-houses if possible. No. 6. occupied with a fine collection of Ferns and Palms. No. 7. Early Muscat Vinery, with a sample of White Nice and Barbarossa in it; very heavy crop and large bunches. No. 8. Early Hambro'-house, with a sample of Golden Champion doing well. In this house the new Duke has been wrought on the Royal Muscadine and Black Hambro' most satisfactorily. This house has a very heavy crop of well-coloured Grapes, some of the berries measuring 4 inches in circumference. No. 9. Early Peach-house; trees in the finest

possible health, and a very heavy crop. No. 10. Intermediate Peach-house, extra heavy crop, and trees very healthy.

We pass from this through the gateway to the back ranges, which are 360 feet in length, in eleven divisions. This range is of various heights and widths, to suit the different purposes for which they are intended. On entering from the right-hand side, the first is a Camellia-house, 42 by 20 feet. Camellias planted out in a bed at the back, although not of any great size, are remarkably healthy and doing well, with staging along the front for plants in pots. No. 2, 42 by 15 feet, Pine-stove, with a fine bed of *Musa Cavendishii* bearing large clusters of fruit. In this house there is a small collection of Pines doing remarkably well, many of the fruits being of large size. If fault could be found at all in such a place as this, it is in the want of proper accommodation for this noble fruit. No. 3, 27 by 12 feet, propagating-pit, and also where pot-Vines are forced for early work. No. 4. Intermediate-stove, filled with a fine healthy collection of half-specimens, grown purposely for vases in the castle and dinner-table decoration. No. 5. Heath-house, same size as the last, filled with a fine collection of the newer and rarer sorts, but not of any great size. No. 6. General greenhouse, 42 by 20 feet, filled with a general collection of the most useful greenhouse plants. No. 7. Fig-house, 42 by 15 feet, planted with Figs, healthy and bearing well. The next four divisions are for Melons, 42 by 15 feet, which are grown on at different stages in succession. When the crop is cut in any one house, the plants are immediately cleared away, new soil put in, and another set planted for late crops, thus having five successions in the season. Winter Cucumbers are planted on the back walls of these houses, Telegraph being the favourite. In front of these houses there are two ranges of substantially-built pits of dressed ashler stone, 160 and 110 feet long respectively, by 8 feet wide, portions of which are adapted for successional Pines and forcing of Strawberries, of which a large amount is done here annually, Keen's Seedling and Glengarry being the favourites. There is one fine feature connected with this place, and that is, in the construction of the garden every attention seems to have been paid in the arrangement to the comfort and convenience of the young garden-men, in the construction of their sleeping apartments, &c. Glamis Gardens being comparatively new, and everything in and about it kept in the best order, gives it quite an air of comfort and cheerfulness. Mr Johnston, his lordship's intelligent gardener here, is well known for his high attainments as a gardener, and his wonderful success as a fruit-grower. At the Great International Horticultural Fruit and Flower Show held at Edinburgh, September 1869, he startled the whole horticultural world with his wonderful productions in Grapes, and the extraordinary number of prizes he took; and at the Great International Fruit and Flower Show held at Manchester a few weeks ago, he still maintained his high position as a cultivator, having taken leading honours in several departments. Mr Johnston's dwelling-house is situated at the north-west corner, and a little distance from the garden wall. The situation is well chosen, and the house has a very pretty appearance, and for comfort and convenience will bear favourable comparison with any gardener's house that I have seen, when the addition is finished that is now being built to it. On remarking to Mr Johnston what a fine house he would have by-and-by, he replied, "I am quite sure Lord and Lady Strathmore would feel ill at ease if they thought any servant under them were uncomfortable." How refreshing it is, in these days of strikes and lock-outs, to hear of such fine feelings existing between employer and employes!

TWO LONDON SUBURBAN NURSERIES.

ONE forenoon, early in September, we found ourselves in the London establishment of Messrs Downie, Laird, & Laing at Forest Hill, which, under the personal direction of Mr Laing, has gained as much prestige with the gardening world of the south, as the parent nurseries at Edinburgh have gained for the firm in the north. This firm is noted *par excellence* for hardy florist-flowers, such as Phloxes, Pansies, Pentstemons, &c., some sections of the Pelargonium—the Nosegay, bronze, and silver tricolors especially. A walk through the nurseries gives ocular demonstration, however, that although every means are taken to be A1 amongst these things, yet there are other subjects which have Mr Laing's best attention. We will point out a few of the special things to be seen at the Stanstead Park Nursery. Unfortunately, the day of our visit happened to be one of the days the Crystal Palace Company had set apart for their Autumn Fruit Show. To this show many of the occupants of the hot-houses had been taken, causing some of them to look a little thin. With this understanding, we commence our tour of inspection with a stove, where, besides other things, Cucumbers in variety were growing. The "Luton Hoo" Mr Laing considers one of the finest sorts in cultivation, and in fact is his pet sort. Though not belonging to the giants of the Cucumber race, it is most certainly a perfectly-shaped and pretty sort, being wanting in none of the points which constitute a good Cucumber. Passing through another stove, we find a large collection of those most beautiful of beautiful-leaved plants: Caladiums in rich variety: Laingii, Prince Albert Edward, Auguste Rivière, Duc de Ratibo, Triomphe de l'Exposition, and Baraquinii, we note as being most distinct and fine. A large quantity of Epiphyllums are growing in the same house. In other pits we found exotic Ferns in fine variety and Palms predominate. A good-sized span-roof house is filled with Camellias of all sizes, and all in the best possible health. An adjoining house is devoted to pot-Vines. These are ripening famously, with great brown buds starting out of the axils of every stem-leaf. These have been grown quietly on, without attempting to stimulate them in any way, and will doubtless give good results, under as good management as they have been so far grown. In a greenhouse we noticed an exceedingly fine salmon-coloured Geranium with a foreign name. Unfortunately it was not noted down, and we dare not venture to say what it is. Tricolor and bicolor Pelargoniums are grown extensively here, the best of the latter class in cultivation emanating from time to time from this nursery. Unfortunately for us, the plants were represented by a lot of nearly bare stumps; the propagator had done his work to perfection amongst them. We were shown a seedling which, if it retains its character, will astonish the lovers of this section of beautiful-leaved plants; the leaf looked more the work of a painter than of a hybridist. We saw a large collection of Pentstemons, but with rare exceptions they had done flowering. One of the features of the nursery is the collection of Phloxes grown in pots, which deserve the word most expressive of *grand beauty* applied to them. They will certainly repay a journey to see them, even should it be a long one. To make a selection is a hopeless case, where each variety is so near perfection. We will just mention a few which are most distinct, though there are many quite as beautiful. J. K. Lord, Lothair, pure scarlet, Queen of Whites, Miss Macrae, Princess Louise, Comte de Lambertye, Ange Gardien, Edith, La Candeur, Liervallii (the red variety), Mesdames Autin, Billy, Domage, Moisset and Andry, Mons. W. Bull, Marin Saison, Menottii, Souvenir des Fernes, and Vierge Marie. These

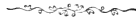
all belong to the decussata section. The early-flowering sorts are not found to thrive in the south. We came across some splendidly-grown young Azaleas, and in all the newest varieties. Pot-Roses we found in quantity, and looking well. Close by a new nursery is being formed, in which the Pansies, Pentstemons, &c., will be cultivated in future—the soil of the new nursery being more suited to their requirements than the stiff clayey soil of the older one.

A hasty good-bye and a run to Catford Bridge Station, and we were again on our way to see more novelty. In due time we found ourselves in Station Road, Woolwich, looking across the railway at an establishment we have often wished to see—that of Mr Cannell. This gentleman goes in for all sorts of soft-wooded plants which do not require heat to grow, the *spécialité* here being Fuchsias and Pelargoniums, more particularly zonals. These we wanted to see, and were not disappointed in finding perhaps the very largest collection of these to be found anywhere. Of the Fuchsias we noted the following as the best, and they are remarkably fine: Cannell's Gem, a variety with *pure* white corolla, and is the very best in this class; Conspicua is a good old sort of the same class; Dr Hessel and Lady Dorothy Neville, novelties sent out by Mr B. S. Williams, are valuable acquisitions; Mr R. Pexton, Our Future Queen, Mauve Queen, Will Sell, Try me, O! Wave of Life, Lucrezia Borgia, Guiding Star, Minnie Banks, Lucy Mills, Beauty of Sholden, Hon. J. Bright, First of the Day, Beauty of Chiswick, Rose of Castile, Inimitable, and Noblesse. These are all single varieties. Entirely failing to appreciate the monstrosities which obtain amongst the doubles, we only marked Purple Prince, Sir Colin Campbell, and Princess Alexandra as worth growing. The last-named variety is one of Messrs E. G. Henderson & Son's introductions of the present year. From amongst the Pelargoniums in flower we selected the following as the best: Mrs G. Gordon; a fine sort in the way of Madame Werle; Truth in the same class is also good; Heartsease, the flowers in the way of Sambo, are in colour a magenta shaded with purple, of most perfect form, though not large in pip—it is of dwarf, free-growing, and spreading habit, altogether a pretty variety; Renown Improved, a reddish scarlet and large trusser; Lord Mayo, a good dark scarlet; Clipper is a free-flowering and promising variety. These are all novelties of the present year. Mr Pearson's batch of new varieties were nearly all out of flower: a dark crimson, General Outram, was magnificent. Only two of Dr Denny's seedlings were in flower; the size of the plants was not such as to enable one to speak confidently regarding them. The new double whites, as here, are the merest rubbish, though for hybridising they may prove valuable. Amongst older sorts, Harry King, Sir C. Napier, Corsair, Circulator, Purple Prince (magnificent in the way of colour), Ianthe, Master Christine, Rev. C. P. Peach, Lady Hawley, Wellington, Delight, President Thiers, Acme, L'Aurore, Florence Durand, Rose Bradwardine, Amaranth, M. E. Buenzod, Progress, Lady Louisa Egerton, Charles Burrows, F. Bradley, Magnifica, Forest Hill Nosegay, R. K. Bowley, Mrs Upton, Crimson King, and Magnum Bonum, will be sure to give satisfaction. Marked as the best amongst the golden tricolors are E. R. Benyon, Peter Grieve, Mrs Headly, Prince of Wales, Sir R. Napier, Achievement, Macbeth, Miss Batters, Lady Cullum, and Sophie Dumaresque; the last-named is also interesting as having been raised by a London omnibus conductor. Of silver tricolors, Lass o' Gowrie, Mrs Laing, Lady Dorothy Neville, Excellent, and Miss Burdett Coutts, are the best.

Besides these species of soft-wooded plants, as before hinted, Mr Cannell is great amongst all sorts of bedding-plants; many of the hardy florist-flowers are largely grown as well. A great part of Mr Cannell's business is carried on

through the medium of the post-office, he having set on foot the plan of sending small packages of plants per post. The more to facilitate and at the same time cheapen the cost of transmission, the system of sending cuttings has been initiated. These are sold at a considerable reduction from the price of plants. It just meets the case of those amateurs who, not having the means to buy so largely as they would desire, owing to the price of plants, and especially of the newer sorts, and the high rate of carriage by the ordinary means, are thus enabled to buy things which otherwise they never would have had, and at the same time have the pleasure—which is a very great one to some—of striking their own plants, and growing them entirely under their own care. Most certainly, from the extent of glass at Mr Cannell's, the system is expanding into considerable proportions.

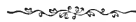
Close to the nursery the company who manufacture the hot-water circulator have their premises. Mr Cannell is well known as the inventor of this apparatus. We were informed that a large number of orders had been booked for it this autumn. It has yet to stand the test of practical working. Doubtless before long something will be published concerning its behaviour. ... R. P. B.



REVIEW.

THE AMATEUR'S GREENHOUSE AND CONSERVATORY. A Handy Guide to the Construction and Management of Plant-Houses, the Selection, Cultivation, and Improvement of Ornamental Greenhouse and Conservatory Plants. By Shirley Hibberd. Groombridge & Sons, London.

The author of this book, extending to nearly 300 pages, is to be congratulated on this very successful effort to supply amateur gardeners with a long-felt want. And amateurs are equally to be congratulated on having placed within their reach so elaborate and practical a guide-book to all that is connected with the operations and principles which the above title indicates. We need not tell those of our readers who have read Mr Hibberd's 'Brambles and Bay-leaves' that he can wield a most pleasant and interesting pen; nor need we tell those of them who have seen his Rose-book and other works besides, that he is as practical as he is pleasing and entertaining. The work before us is more striking, from its sound practical advice about every point connected with greenhouse and conservatory plant culture. There seems to be nothing neglected, down to the very crocking of a pot, which, as well as most other particulars, is well illustrated by woodcuts. Select lists of plants suitable for various seasons, circumstances, and purposes, are furnished, which, to the inexperienced amateur, must prove of great use. We heartily commend the book to all who are interested in greenhouse and conservatory culture as a thoroughly practical and useful guide.



Calendar.

KITCHEN-GARDEN.

<p>ALL operations we recommended to be performed last month may be carried forward without delay. A good start with rough work before the</p>	<p>winter sets in will tell favourably throughout the whole season, and the great advantage of having ground work done early will be in favour of</p>
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vegetable growing. We know that many grow good vegetables on un-trenched land; but we also observed that the same growers would grow finer quality on land which has been well trenched. Protection for crops should now be at hand, and ready when circumstances may call it into use; and a change to severe weather may be expected at any time, and will tell all the more severely after such a damp and sunless season. Celery (if strong and luxuriant) may be easily destroyed by frost. In damp localities it suffers worst. A quantity of dry litter or fern answers well for protection; but should be taken off when the storm of frost is past, as the damp which it would harbour would rot the plants. Asparagus-beds should now be made clean; but we question the propriety of covering the beds with "good manure" at this season, as recommended by many writers. We have seen more mischief from the roots rotting by heavy autumn covering than from any other cause. We prefer manuring the beds as the roots are about to become active and search for food. Wholesome manure and dustings of salt will then be of great service. Broad Beans are sown by some at this season for early work. Protection from mice, &c., must be given by dusting red-lead, hellebore powder, chopped furze, or some other material to keep off the vermin. Peas also can be sown in dry sheltered borders this month for chance crops; and this is necessary where there are no means of raising crops under glass for spring planting.

Brussels Sprouts, all the Cabbage tribe, Broccolis, &c., should be cleared of all decaying leaves, as when snow falls they become offensive, if nothing worse befalls them. Broccolis which have made strong growth, and are drawn up, may be laid down with their heads to the north; those which are short in the stalk and sturdy will be as well standing as they are. Any Walcheren or Granger's now turning in should be protected from frost and dashing rains, which discolour them. Litter placed among Broccoli will act as a protector to a considerable extent. Carrots and all other roots may be stored if not already done. Pits an-

swer well for carrots and beet; they can in all respects be treated as potatoes. Globe Artichokes may have soil thrown up round their collars, or litter placed round them. In very wet localities it is well to lift and pot a number of the suckers, and they can be planted out in spring in well-prepared ground.

Jerusalem Artichokes may have some litter thrown over the roots, so that they can be dug out when wanted in frosty weather. Cauliflowers under lights may have plenty of air on every favourable opportunity; the surface between the plants should always be kept free from weeds, &c., by stirring it frequently with a pointed stick. Cauliflower-heads turning in quickly may be placed in a cellar or outhouse, and kept dark. They often keep good for weeks when lifted carefully and the roots preserved entire. Chicory may be lifted and placed in a mild growing temperature where it can be kept dark; a few roots taken in every week will keep up a supply. Lettuce fit for use may be lifted and placed in a frame; with the roots entire, and kept dry and airy, they will be fit for use for weeks to come: a frame placed over a bed of them is a useful system of keeping them from severe weather. Salsify and scorzonera may be treated as parsnips, digging up a portion to afford supplies during frosty weather. Tomatoes may now be gathered, and hung up in dry quarters to ripen. Those in pots for winter and spring supply should not be allowed to set too many fruit. Keep them growing steadily with plenty of light and air and gentle bottom-heat. Draw earth over Turnips to keep them from severe frost. Get a quantity of Asparagus in a frame or pit on warm leaves or manure for forcing. Keep up successions of French Beans, Radishes, Rhubarb, and Seakale, as may be required: cover the latter with manure and leaves if no warm house or cellar is at command. Mushroom-beds may be made once a fortnight or monthly, according to their size and the quantity required. Have the bed neither very wet nor very dry. But under the best treatment they often fail, and often do well without almost any attention; keep down wood-lice. M. T.

FORCING DEPARTMENT.

Pines.— If young stock, such as August and September potted suckers, are at all crowded, let them be taken out of the pit and replunged at wider distances, now that the autumn fruit will be mostly cut, and more room is at command. Being now well rooted, the young stock will require quiet careful treatment for the next three months, so that they may neither grow too much and become drawn, nor get any stunting check which may cause them to start prematurely into fruit in spring. 55° at night will be heat sufficient for them when the weather is cold, with 5° more when mild. When the temperature exceeds 65° by day give a little air. The bottom-heat should not be more than is enough to keep the roots healthy, and 75° will be sufficient. If the pots are firmly and fully plunged in moderately moist tan or leaves, little or no water will be necessary to keep them fresh and healthy. The atmosphere should be dry and the pit free from drip, at the same time avoiding a parching atmosphere. Suckers recently potted should have 5° more heat than is directed above, until they are well rooted. See that they too are not too thickly placed. These, if they are stocky suckers to begin with, and in light pits and near the glass, may be grown gently on all winter, if the general condition of the sucker stock makes this desirable. As a general rule, the less young pines grow in the dead of winter the better they will grow after the turn of the year. That portion of the succession Queens intended for starting soon after the shortest day, should have a steady temperature of 60° at night, with about the same amount of bottom-heat recommended for suckers. Where the bottom-heat is derived from hot-water pipes, and the plunging material shallow, see that the plants do not suffer from excessive dryness. All plants that may show fruit now of Cayennes, Black Jamaicas, and C. Rothschild, should be carefully dealt with, for they come in at a time in spring when they are much appreciated. Place them in a light pit near the glass, with a bottom-heat of 85° and a night air temperature of 70°, and keep the soil just moist, but not wet. Keep plants

now swelling off their fruit also steadily moist with manure-water, with the same heat named for those that are just started. Do not water indiscriminately at this season, but examine each plant, watering those that require it. The atmosphere, although it should not by any means be dry, should be less moist now than in lighter weather, or the result will be drip and unsightly large crowns. Remove fruit that are quite ripe and not required for table immediately they ripen to a dry place, with a temperature of about 50°. All Pine-pits that can be readily and conveniently covered at night should be covered after the middle of the month. It saves firing, and is better in cold weather than hard firing.

Vines.— This is perhaps the most trying month of the year for Grapes that are still hanging. If they can be successfully kept during the time the Vines are shedding their foliage, there is not much fear of them after. If the outside borders have not been covered, as previously advised, it will be a great advantage to do so now. Look carefully over every bunch two or three times weekly and remove every sign of decaying berries, and if the leaves are still hanging to the Vines and come away with a light touch, remove them all. There should not be a plant requiring water in the Vinery where Grapes are required to hang successfully. Where there is no alternative but to place plants under Grapes it is best to cut the bunches with a portion of the wood attached, and place them in bottles of water with a little charcoal in them, in a dry room of an equable temperature of 45°. Grapes keep pretty well in this way, but the flavour suffers. Avoid the yet too common and absurd practice of making fires, and at the same time opening the ventilators in damp or wet days, when the house should instead be kept quite close with just a slight heat in the pipes. The time to apply extra heat is on fine days when the house can be fully ventilated to let out damp. In cold weather keep the temperature steady, at about 45°. Vines intended to be forced before the end of February will be benefited by having their outside bor-

ders protected from drenching rains. A good plan in the case of those not to be started till February is to cover the border with a thin layer of leaves, and then cover with wooden shutters or tarpauling. Prune all Vines from which the leaves have fallen and the fruit is cut, and clean and dress them, and otherwise prepare the Vineries for starting as advised last month. Introduce a bed of fermenting leaves and litter into the inside of Vineries to be started by the end of the month, and when it begins to heat turn a portion of it daily: the heat so generated keeps up the temperature for a time, at first without much firing, and the steam so created is favourable to the swelling buds. It will be well also to cover the outside border with a sufficient depth of leaves and stable-litter, which, if it does not put much heat into the border, will at any rate prevent radiation. Start the Vines with a temperature of 55°, and sling the tops of the Vines down to the same level or below that of the top of the front lights, thus bringing the tops of the Vines into the same temperature as their lower parts, otherwise the Vines will be apt to break at the top before the bottom buds push, and the latter will in consequence be weaker. Do not increase the temperature in the case of pot-Vines that have been put into heat last month. Take every advantage of any sunshine that may occur, and shut up the house under its influence, and so lessen the amount of fire-heat. Whenever the Vines burst their buds, which they will produce two at an eye, cut off the weakest as soon as it can be done. See that all boilers and pipes are in proper working order in succession Vineries before they are required.

Peaches.—If there are any leaves hanging about trees in late houses, give them a brush occasionally with a hair broom and bring them off. When forcing is to be commenced by the beginning of December, the trees should be pruned; all the glass, wood, and wirework, either well-scrubbed with soap and water or painted. Dress the trees with the usual coating of sulphur, soot, and clay, especially if there has been any spider about

them last season. Fork up any inert soil from the surface of the border, and replace it with fresh loam and some half-inch bones; and in the case of trees that are established and bearing heavily, add some horse-droppings. If the inside border is dry, give it a good soaking of tepid water towards the end of the month, and protect the outside border, as in the case of early Vines. If the house is started the end of this month, 40° to 45° will be heat enough to begin with.

Figs.—If any of the very late sorts are yet to ripen, let the atmosphere be dry, and the temperature 60° to 65°. Prune, dress, and tie the trees in early houses, and keep them cool and moderately dry at the root. Pot-plants may be stored in any shed or orchard-house, where severe frost cannot reach them. Trees that have their roots circumscribed to a small space, should have the surface soil removed, and a top-dressing of half loam, half well-decayed manure.

Cucumbers.—Proceed to force cautiously, now that the days are short and sunless; from 65° to 70°, according to the weather, will be a high enough night-temperature, allowing 5° more by day. Keep the glass clean, to admit as much light as possible. The water at the root, and in the air, must be decreased in proportion to light and heat. Put on a little air every day. Do not allow the plants to bear many Cucumbers at a time, or it will cripple their energies. Continue to stop young growths at every joint, and remove deformed fruit at once. Green-fly frequently makes an attack at this season, and it must be destroyed by two or three weak fumigations, instead of one stronger one. Mildew sometimes shows itself at this time also; dusting with flower of sulphur is the best remedy for it.

Strawberries in Pots.—Protect these from heavy rains; an orchard-house or Peach-house, where they will not be exposed to severe frosts, or cold frames, are good places for wintering them; but where such quarters cannot be afforded them, stack them by laying them on their sides, packing about the pots with sawdust or ashes in the form of a Potato-pit—the crowns outwards of course. In this way they can be protected when necessary with straw or mats.

Notices to Correspondents.

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in the 'Gardener' to David Thomson, Drumlaurig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to, be forwarded by the middle of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

WIREWORM.—I should advise your correspondent R. P. B. (See 'Gardener,' page 464) to try a good dressing of gas-lime for kitchen-garden infested with wireworm. It is best to apply in autumn, and let it be spread over the surface, and dug or forked in in early spring. I have tried it here for grubs, &c. &c., and think it an excellent remedy for destroying such pests.

ROBERT SOWERBY.

A SUBSCRIBER.—It is difficult to propagate the Tulip-tree in any other way but from seed, which, when saved from trees in this country, seldom germinates. Abundant supplies are, however, annually sent home from its native country—America, from which nurserymen obtain young plants, which they sell at almost nominal prices. If you can layer the branches of your tree, you may be successful in rooting them in about two years. But seedlings are always preferable, as they make the most vigorous and handsome trees. The Tulip-tree is sawn into boards, and used instead of slates for roofing in America.

C. C. C.—There is at least no objection to your first suggestion: we have them hung in the centre, and like them so, because when they fall in at the top they let a stream of air up between the foliage and the glass. We are not aware that there is any boiler that does more work with the same amount of coal than boilers of the Cornish make, which, with the various improved saddles, we reckon the best. For very early forcing we recommend bottom-heat. The Gros Colman is quite equal to the Black Hamburg in the point you name. It is also a very robust and heavy cropping Vine, and takes the market remarkably well, on account of its huge berries and fine colour.

MAUD.—The weedy appearance of your Lobelia is the effect of the very wet summer experienced in so many localities this year. In your climate *Nemophila insignis* would be far more effective. For blooming in August, sow the 1st of June in good soil, and when the seedlings can be handled, thin them out to about 4 inches by 10 inches, and you will not be disappointed. We have it beautiful now (middle of October), after 9° frost. For distant effect, no other blue that we have tried can at all approach it. Lobelia, even in a fine season, looks dull and leaden beside it when seen at a distance; and, of course, the *Nemophila* is far less trouble to grow.

H. ROSE.—Many thanks. Shall be glad to hear from you at any time.

A BEGINNER.—You will not succeed in beginning to force so early unless the Vines are thoroughly well ripened. If they are not, you will be more successful

by allowing them to swell their buds in a cool temperature before applying fire-heat : of course your crop will be late. If you determine to start them before Christmas, try and give a gentle bottom-heat, by plunging the pots in a bed of leaves, or in a bed underneath which there are hot-water pipes.

A LEARNER.—No. We will be glad to hear that you have tried any other with greater advantage.

R. T.—If you want dwarf trees and quick returns, plant Apples on the Paradise stock and Pears on the Quince. But if you wish for large trees and great crops ultimately, plant them on the Crab and Pear stock respectively, and lift or root-prune them biennially till they begin to bear freely. We never recommend nurserymen. Consult our advertising sheets.

P. W.—You cannot grow more profitable Orchids for supplying cut bloom from now till Christmas than the varieties of *Calanthe vestita* and *Lycaste Skinnerii*, *Cypripedium insignis*, and *Cœlogyne cristata* and *Odontoglossums* in variety.

AN AMATEUR.—W. Thomson on the Vine, and Williams's *Orchid-Growers' Manual*, will supply the information you require. See also a series of papers in the 'Gardener' of this year.

A. D. F.—*Clematis Jackmanii* has more points of excellence than any of the darks that we have seen. *Lanuginosa nivea* is by far the finest white ; *Lady Bovil* the best bluish lavender. Give them rich soil, and do not plant till spring.

COTTAGER.—The most useful for your purpose would be Lord Suffield, Stirling Castle, King of the Pippins, Blenheim Pippin.

M. N.—Instead of liming your stiff soil now, we would rather do it in spring, spreading it on a rough surface in a hot powdery state, and forking it into the soil.

W. BRIDGES.—You should not have the slightest difficulty in having your garden gay in August by adopting what is generally termed the bedding system, using the best of scarlet and pink, &c. *Pelargoniums*, *Calceolarias*, *Verbenas*, *Alyssum*, *Lobelias*, *Alternantheras*, and the various colours, would do splendidly in your climate. November is a much more difficult month—about the most difficult—to get a bright garden. Still, after you lift the tender plants named above, much can be done to enliven a garden by having in reserve a stock of Golden and Silver Ivies and Hollies, variegated *Periwinkle* and variegated *Veronica*, and shrubs of various hues. Besides these, such plants as *Arabis lucida variegata*, *Arabis albida*, some of the variegated *Aubretias*, in combination with many of the beautiful glaucous *Sedums* and *Saxifrages*, such as *S. longifolia*, *S. rosealaria*, and others. Then there are *Euonymus japonica argentea* and *E. j. aurea*, *Pyrethrum Golden Feather*, and *Alyssum variegated*, we should say would be quite effective in your climate in November, and many of the early-flowering *Chrysanthemums* might be used. For your wall, *Magnolia grandiflora*, *M. conspicua*, and *M. Exmouthii* would be at home in your climate. *Cratægus pyracantha*, *Chimonanthus fragrans*, *Wisteria sinensis*, *Jasminum nudiflorum*, *Clematis Jackmanii*, *C. luginosa nivea*, *C. Princess Mary of Cambridge*, *C. Lady Bovil*, *Lycium europeum*, *Tecana radicans*, *Ceanothus azureus*, *Escallonia macrantha*, *Skimmia japonica*, *Arbutus unedo crispus*, *Lonicera tartarica*, and we should say *Camellias*,

Myrtles, and Azaleas, would succeed well on walls with you. Get the 'Handy-Book of the Flower-Garden,' which can be had from our office, and see remarks in our present issue.

The other question is one we will not incur the responsibility of attempting to put you right in. Having read book after book on the subject, and failed in your object, it is needless for us to attempt the difficulty, particularly as the subject is one we do not profess to be proficient in.

R. B., CAMPBELTOWN.—Antirrhinums will flower in summer if sown in heat early in March, and when large enough to handle, prick them out into seed-pans and plant out about the first week in June. Phloxes in the open border require no protection in winter.

R. WYNNE, HAYDON BRIDGE.—Try *Violas Perfection*, mauve blue, and *Golden Perpetual*, yellow. The best yellow Hollyhock is *Queen of the Yellows*. There is not a first-rate black yet—*Black Douglas* is perhaps the best.

R. T. JOBSEN, KENDAL.—The following 12 *Pelargoniums* are not expensive, and will do well for Exhibition purposes—*Artist*, *Charles Turner*, *Congress*, *Envoy*, *John Hoyle*, *Lady of the Lake*, *Mary Hoyle*, *The Rival*, *Mr Rassam*, *Warrior*, *William Hoyle*, *Queen of Scots*.

J. BURTON, NORHAM.—*Delphinium Beatsonii* is a double, *Madame H. Jacotot* is a single; both very fine. *Rhododendron Dalhousieana* and *Countess of Haddington*, both require protection through the winter.

ERRATA.—In last number, page 472, line 19 from foot, for "4600 feet" read "7600 feet."




THE GARDENER.

DECEMBER 1873.



KEEPING GRAPES IN WINTER.

E have recently received letters from various localities, stating that Grapes that should have hung in good condition on the Vines for a long time have moulded and dropped from their stalks. In one case, the whole crop of Muscats was literally lost. Considering the general dampness and want of sunshine which characterised the Grape-ripening months of August and September, and the heavy rainfall, it is not by any means surprising that Grapes should, in many instances, not keep well. There cannot be a doubt that the successful keeping of Grapes throughout the winter depends very much on the circumstances under which they are ripened. At the same time, very much depends on the way in which they are managed after they are ripe, especially from the middle of October up to the time that the Vines shed their leaves and become comparatively inactive. We know, from the loss that has occurred to several, that this is a subject that may be discussed with profit to some of our readers; and, after opening the subject with a few remarks, we will be very glad to have the experience and ideas of our correspondents.

Glancing first at the difference which certain treatment in the ripening of Grapes makes to their hanging for a length of time after they are ripe, with the greatest possible freshness and the least possible loss from damping and decay, we consider it of great importance that they should be grown and ripened under the influence of as much light as possible, and freely subjected to a circulation of dry warm air.

The character of Grapes grown under the influence of a moist, steamy atmosphere, with a less amount of ventilation, is very different to those managed on the drier and more airy system. There is not only a flabbiness and dropsical character produced in the whole growth of Vines under close moist treatment, but the fruit, as all experienced Grape-growers know, partakes of this characteristic. The berries may perhaps be larger, but they will be less fleshy and more tender skinned. In short, a predisposition to ferment and rot when the trying season comes is imparted to them. On the other hand, when cultivated on the dry and airy system, the berries are firmer, and the whole system of the Vine gets into a more matured or ripened state. We consider it of much importance that Grape crops—especially those in the northern parts of our kingdom—should be completely ripe by the first week of October, and finished, too, under the influence of a circulation of dry warm air, produced, if the season render it necessary, by fire-heat. Unless Grapes are thoroughly ripened, and the sugary matter in them well developed, they are much more likely to ferment under the influence of too much moisture at the roots of the Vines or in the air of the Vinery. Grapes ripened in a light and large airy Vinery are much more likely to be ripened off in that condition which not only constitutes them better Grapes, but also much easier of keeping well after they are ripe.

Turning now to the leading points of management in keeping Grapes after they are quite ripe : there can be no doubt that the most disastrous failures have occurred from the want of studying the laws of heat and moisture in their relation to the Grapes. If water stagnates about the roots of Vines in winter, that alone is enough to cause the Grapes to mould and decay. But the more general cause of failure arises from moisture settling on the bunches. The drainage of the border should be thorough. Not only so, but, in wet localities especially, it will be an advantage to throw heavy rains off the border by means of wooden shutters or tarpauling, after the middle of October at the latest. Still, and although this precaution of protection from rains is desirable, we could point to many cases of the most perfect success where such protection was never adopted, but where the borders were well drained.

The chief secret of success lies in the ventilation and firing of the Vinery ; and when these points are judiciously carried out, Grapes often keep well, while other matters may only be second-rate. First, it is necessary that the berries be more severely thinned than for summer Grapes, so that the air can circulate about the whole of the berries ; for it is damp settling on the berries that produces the mischief, and, as a consequence, this is the thing by all means to

avoid. Hence the too common practice of ventilating freely on damp foggy days is a great mistake. This is simply drawing a volume of air surcharged with moisture through the Vinery, to be condensed on the bunches and Vines. Fire-heat in conjunction with ventilation on such days does not mend the matter ; it rather increases it, by causing a more rapid current of damp air to pass through the Vinery. The thing to do is to keep the house close, especially at the front, during foggy damp weather ; to keep the temperature about 45° , and just a chink of air at the top, but, if possible, in such a manner that damp does not fall into the house : hence the value of wet-weather ventilation, as it is called. The time to fire and ventilate Vines freely is on bright dry days, when it is certain that in the circulation more damp can be expelled than there is admitted, and always dropping the heat to the minimum of 45° to 50° before night. All inside surfaces should be dry after the 1st of October, and never moistened, and a low stagnant temperature should be avoided. The result of having the air and Grapes inside the Vinery as cold as the external atmosphere, or nearly so, is, that the moisture that is admitted with the air from the outside condenses immediately on the surface of the berries ; whereas, when they are warmer than the external air, they do not act as condensers. This law of heat and moisture is very strikingly exemplified by walking into a moist stove with a piece of smooth cold wood or slate, or, in fact, any cold, hard, smooth substance. The result is, that it is immediately covered with dew-drops. The cold substance has condensed the particles of moisture in the warm air—and just so the Grapes act to their own destruction. The temperature should therefore be kept steadily above that of the external air, to prevent this destructive result. We know of a whole Vinery full of Grapes being lost last year by an amateur, simply by his keeping the front and top ventilation always open in the dampest weather, and so subjecting the Grapes to a cold vapour bath.

There is one particularly ticklish time or stage when Grapes are the most difficult to keep, and that is, just as the foliage begins to change to the "sere and yellow leaf." Some varieties of Grapes are then very subject to go wrong under the best treatment. Small white stars of decay, cutting into the skins and radiating from a centre like a star, first appear, and soon the whole berry goes wrong. The first signs of this should incite to more vigilance. The affected berries should be at once removed, and all the laterals where there are any ; and where there are not, a portion of the foliage should be removed, so as to let light and air play more freely about the bunches. We have known the progress of decay arrested by removing part of the leaves while they were comparatively fresh. No doubt the removal of part of the

foliage helps to paralyse the roots, and prevent their pumping up a superabundant supply of sap to the Grapes in a crude state; at all events, it admits a freer circulation of air, and a stagnant atmosphere is an evil. We have kept Grapes this season till very lately in a low sunk pit under obscured glass, and, we may say, under a constant downpour of rain, by simply keeping the pipes constantly warm, and surfaces perfectly dry, so that the Grapes were always too warm to condense moisture. Out of 300 bunches under such conditions, not 2 lb. were lost by decay; while if the fire-heat had not been constant, and a cold stagnant air allowed, we are certain the result would have been the very reverse.



THE FUTURE OF THE ROYAL HORTICULTURAL SOCIETY.

THERE now seems every probability of the Kensington Garden being doomed; and this is a subject rather for congratulation than complaint, since it has been a stumbling-block to the Society since its first establishment. Bad in point of design, and expensive to keep up, it has done nothing in the interest of horticulture that might not have been done far better in the fine old garden at Chiswick. The last-named establishment has always been interesting to horticulturists, and would now have been one of the finest gardens in England for all practical purposes had not its resources been cut off to supply those of its would-be more aristocratic companion. The Kensington establishment has relapsed into little more than a fashionable square for the convenience of householders in the neighbourhood, and we hope yet to see Chiswick again the centre of horticulture—a position it ought always to have retained. The sooner the gardens at South Kensington are handed over to her Majesty's Commissioners the better; and when that step is taken, the Fellows may congratulate themselves on having got rid of a burden that has weighed down and thwarted their best efforts for years. There are legal difficulties in the way of this being done; and owing to the bungling policy of the management, the Society's affairs have unhappily become so complicated and entangled that we are very much afraid one difficulty after another will prevent their adjustment.

Like Diogenes, we look in vain for a man able and willing to take the helm of the stranding ship. Committees and councils are all very well in their way, but we know of nothing more likely than these to cripple and warp real progress. We never yet knew a concern, however large and complicated, that could not be better managed by an energetic man properly seconded, than by the best of committees.

The great secret of Lindley's success may be attributed to his vigorous and decisive mode of action, and this no committee ever dared to stifle. He held the power in his own hands, and all others did his bidding without a single complaint, since none doubted his ability to rule. If the garden at South Kensington is handed over to the Commissioners, it is probable that some satisfactory arrangement could be made at the same time with regard to the exhibitions, while all the other work of the Society can very well be carried on at Chiswick under the present able management there. It must be borne in mind that while the South Kensington Garden is held by the Society, a yearly rental expenditure of 4000 guineas is incurred—that is to say, a debenture debt of £2000 per annum is due, and a rental of £2400 ought to be paid in addition, although the payment of the last sum is conditional on the Society's annual profits being large enough to meet the claim.

The object of the Society, according to the original charter, is, to further and advance Horticulture ; and this it has done in its day, but latterly its power to work with good effect has been considerably weakened by the expenses of the Kensingtonian playground and bad management combined. It must be borne in mind that the land at South Kensington is valued at from £250,000 to £300,000, and having been purchased by the surplus funds from the Exhibition of 1851, it naturally belongs to the public for the public good. Looking at it in this light, it certainly does not seem right for the Society to retain so much valuable property, while they employ it mainly as a fashionable square or promenade. Certainly there are the periodical meetings and exhibitions ; but there is every reason to believe that these could be held with equal benefit and convenience (under certain conditions) even after the property lapses into the hands of the Commissioners ; while the uses to which the latter body might apply it would be more beneficial to the general public than those now adopted by the Society. The gradual decline of the Society is much to be deplored by all devoted to horticultural and kindred pursuits, and is mainly attributable to the lethargy of successive councils, and the absence of a man of sufficient calibre who would have kept up the status and dignity of the Society as well as of horticulture. The late assistant-secretary probably did as much as any other man, who was not practically a horticulturist, could have done under the circumstances ; but if the Royal Horticultural Society is to prosper, a man must be at its head in whose ability to govern, horticulturists as a body have full confidence. We need scarcely add that even the little confidence felt in the late council is not possessed by the present one, so that the Society is at present practically without the means of coming to an arrangement with the

powers that be. The sooner, therefore, these blunders are rectified, the better it will be both for the Society and for horticulturists.

At the last meeting of the Society (November 12) some of the leading Fellows belonging to the horticultural party were busily organising a plan by which the Society's affairs might be placed upon a more satisfactory footing. Any straightforward course of action on the part of the horticulturists is sure to meet with success; and if ever the Society needed a hearty co-operation of its practical horticultural members, it is at the present time. Just now we know nothing of the scheme likely to be adopted in order to extricate the Society from its present undignified position, but we are certain that prompt and decisive action will prove the best. Horticulturists have been badly treated by the Society; but at a time like this, petty grievances must be forgotten, and all interested in the matter must work together for the general good.



NOTES ON HARDY CONIFERS.

CEPHALOTAXUS (THE CLUSTER-FRUITED YEW).

THOUGH botanically different from their near allies the Yews, the species which constitute this genus have a general appearance suggestive of that group, and are associated with them in the coniferous sub-family *Taxineæ*.

The few species in cultivation are natives of Japan and China, where they are found at high altitudes, forming medium-sized trees, valued for their timber, and extensively cultivated in the gardens and pleasure-grounds of both countries as decorative trees.

If less hardy, and somewhat more fastidious in regard to soils and situations than the Yews, all the species are quite handsome enough to justify their being recommended for trial wherever a well-sheltered locality and a deep rich loamy soil can be made available; and where they do succeed they are objects of great beauty, their warm green tints blending most pleasingly with the darker green of the common Yew and its varieties.

Like the Yews, they are peculiarly adapted for shady situations, where, if the soil is moderately moist, and each plant sufficiently isolated to admit of the branches being freely developed on every side, they rarely fail to form neat and attractive specimens.

C. Fortuneii (*Mr Fortune's Cephalotaxus*).—This is one of the many valuable accessions to our list of hardy plants for which we are indebted to the distinguished collector whose name it bears, and by whom seeds were first sent to this country in 1848. It is found wild in several districts in Japan and the north of China, chiefly in high but sheltered valleys, and attaining heights of from 40 to 60 feet.

Though of slow growth, and thriving here only in well-sheltered localities, it is in favourable circumstances an interesting and distinct-looking shrub, of a broadly conical shape, sparingly furnished with long slender branches, divided into numerous branchlets slightly drooping at the points: the leaves are from 2 to 3 inches long, of a linear-lanceolate form, the upper surface bright glossy green, and the under dimly glaucous. There is a very desirable variety of this species obtained from seed, and recently introduced into cultivation, which has been named *F. robusta*, only differing, however, in its denser and more vigorous habit of growth.

C. drupacea (the *Plum-fruited Cephalotaxus*), another of Mr Fortune's fine introductions, and found wild in similar localities in Japan and the north of China as the preceding, is in its native habitats a small bushy tree, rarely exceeding 30 feet in height.

This sort was at first believed to be the female form of "*Fortuneii*," and was distributed under the name "*F. foemina*;" but as both sorts have since been found to be fruit-bearers, the propriety of ranking it as a distinct species is sufficiently obvious.

As yet it has only been seen here as a moderate-sized shrub, with a close conical habit of growth, the branches much divided into small branchlets, profusely clothed with yew-like leaves from 1 to $1\frac{1}{2}$ inches long, of a yellowish-green colour on the upper surface, and faintly silvery on the under.

Being much hardier, and more accommodating in regard to soils and situations than *Fortuneii*, it is more frequently met with in collections; and though lacking the distinct tropical aspect peculiar to that species, it is on the whole a more useful outdoor ornamental shrub, and makes a handsome lawn specimen in ordinary soils, if moderately sheltered.

C. pedunculata (the *Long-stalked Cephalotaxus*).—This fine species, still better known under its original name *Taxus Harringtonia* (the Earl of Harrington's Yew), was first introduced into British gardens in 1837 from Japan, where in high sheltered valleys it forms a broad bushy shrub, frequently attaining heights of from 20 to 25 feet. It is the *Inukaja*, or "Wild Yew," of the Japanese; and is by them extensively employed as a hedge-plant, as well as for the decoration of their gardens and pleasure-grounds.

In this country it forms a dense spreading bush, very abundantly branched, the branchlets short and slightly pendent: the leaves are from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long, closely set on the shoots in two rows; of a glossy light-green tint on the upper surface, and having a silvery glaucous band underneath on each side of the midrib.

Like the other species of *Cephalotaxus*, a mild or well-sheltered

locality is indispensable to its successful cultivation; and in such, provided the soil is rich, and the subsoil cool, without being damp, it is a most beautiful and interesting plant, and well worthy of a prominent place in any collection of the choicer Conifers.

PRUMNOPYTIS ELEGANS (THE GRACEFUL PRUMNOPYTIS).

As far as we know the only representative of the genus in cultivation, this superb little plant is a recent introduction from Valdivia, in South America, discovered by Mr Pearce, growing as a broad bushy shrub of only a few feet high, at altitudes of from 5000 to 6000 feet above the sea-level.

It is as yet only to be seen here in a young state, and presents the appearance of a miniature Yew. In habit of growth it is sharply conical, very profusely furnished with tiny branches from the ground upwards, the small Yew-like leaves, of a bright green colour, thickly covering the shoots.

The experience of the last two or three years proves that, though requiring a moderate amount of shelter, it is quite hardy in most localities, and at the same time, that it may be cultivated with the greatest facility in almost every variety of soil, with a preference, however, to light deep loam. It is doubtless a valuable acquisition, and will contrast well with the fine dwarf *Retinosporas*, and other dwarf compact-growing Conifers, in small garden beds, or in front rows of the taller forms, while no plant will be more effective for planting on and around rockeries.

TORREYA (THE FÆTID YEW).

This small genus, named in honour of the late Professor John Torrey of New York, one of the authors of the 'North America Flora,' is closely allied to the Yews, and is composed of small evergreen trees, natives of North America, Japan, and the north of China. They are remarkable for the peculiarly disagreeable rue-like odour they emit when bruised or burned,—hence their popular name.

Though very ornamental, with one or two exceptions, they are unfortunately scarcely hardy enough to be very generally planted as shrubby plants in Britain; and though specimens of all the species are to be found in exceptionally mild localities, they suffer injury to a greater or less extent in most winters, and present an appearance, even at their best, the reverse of handsome.

The two following are noted as the hardiest of the genus, and as likely to succeed when well sheltered; they are at least interesting enough to be well worthy of a fair trial where a favourable situation is available:—

T. nucifera (*the Nut-bearing Torreya*).—This species is found wild on mountains in the north of Japan, particularly on the islands of Nippon and Sikak, where it occurs in great abundance as a large shrub or tree of from 20 to 30 feet in height, and is also cultivated all over Japan, its nuts producing an oil useful for culinary purposes.

It is here a compact broadly conical bush, with numerous horizontal branches divided into short branchlets, thickly clothed with Yew-like leaves of a dark glossy green colour above and slightly glaucous underneath. Where this plant succeeds, it forms an extremely pretty and interesting specimen, very desirable as a variety among other dwarf or slow-growing Conifers.

T. myristica (*the Californian Nutmeg*).—This is a fine species indigenous to the Sierra Nevada Mountains in California: introduced in 1848. It is said to be a small bushy-headed tree with spreading horizontal branches, growing to heights of from 20 to 40 feet. The timber is of a light-yellow colour, heavy, fine-grained, and is said to resist the attacks of insects better than any of the other pines.

Since its introduction to Britain, it has been widely distributed in almost every district; and while it undoubtedly requires to be well sheltered, it has proved itself to be the hardiest of the genus, and fine specimens are frequently to be met with growing as freely as the common Yew. Its habit of growth is sharply conical; the branches, which clothe the stem from the ground upwards, are divided into short stiff branchlets; the leaves are shaped like those of the Yew, and from 2 to $2\frac{1}{2}$ inches long, of a yellowish-green colour above, and of a paler tint underneath. It is an elegant lawn plant, and valuable as a contrast with others of darker tints and denser habits of growth.

SALISBURIA ADIANTIFOLIA (THE MAIDENHAIR TREE).

Of this beautiful genus this is as yet the only species known to botanists. It is found abundantly not only wild, but in cultivation as an ornamental and timber tree—in many provinces in China and Japan forming a handsome deciduous tree of from 80 to 100 feet in height.

It has been cultivated in British gardens since 1754, and large handsome examples of it are to be found all over the country. Its habit of growth is erect and bushy, with a conical-shaped head; the branches are somewhat irregularly disposed on the stem, horizontal, and much divided into short branchlets; the leaves, which are produced in great profusion, are about $1\frac{1}{2}$ inch broad, fan or wedge shaped, and have the appearance of the pinnules of a large *Adiantum* Fern. They are on both sides of a pale-green colour.

It is scarcely necessary to say that this is one of the hardest of ornamental trees, of free growth in almost every district and in almost every variety of soil, and few are more ornamental. The singular beauty of its curiously-formed leaves, and its picturesque aspect at all stages of its growth, commends it to all who have a taste either for landscape effects or for elegance of form in foliage.

HUGH FRASER.



SUMMING UP.

WE have again arrived at the last monthly number for the year, and in summing up impressions of our magazine for the eleven months that have gone, we feel satisfied it has been a successful year, as far as the literary interest and usefulness of the matter it has contained is concerned ; and also feel a conviction that the gardening periodicals of the country have, on the whole, fully maintained their position in general interest, as far as we are acquainted with them, and able to judge. It is also abundantly evident that the public interest in gardening matters is on the increase, as must inevitably be the case with the renewed prosperity of the country, and as polite and intellectual tastes with the many supersede the animal and merely sensational.

It appears also pretty clear that Horticulture has now at last broken loose from her leading-strings, and is able to walk alone—indeed, has taken to carry her old nurse on her back, and give her an airing in the country betimes. No doubt the old lady complacently fancies she has the good behaviour of her old foster-child still in her keeping ; but it is evident to other eyes that she is in her dotage, while Horticulture is in the vigour of health and growth.

One of the most melancholy reminiscences of the year are the unfortunate squabbles of the Royal Horticultural Society, which seems yet as far from settlement as the Tichborne case: we wait with some interest the summing up of each when it comes. Many gardeners in the country begin to be puzzled what the Royal Horticultural Society really is, and if there be such a thing, inquire, what earthly use is it to gardening ? The Society and Horticulture seem two distinct entities, and instead of the Society fostering gardening, it and gardeners generally are brought into contempt by the connection. The Society has a couple of gardens, one of which it cannot conscientiously call its own : dignity will not pay the rent, as Mr Micawber more than once found by experience. The other garden is the scene of little horticultural farces, at intervals—Peas, Potatoes, and Pelargoniums are made to show their paces before an interested public : we, in the country,

are in respectful wonderment whether it is all serious or only a pantomime.

All the great shows of the year have been attended with success, and been, on the whole, advances on former years, judging from the reports. Bath, however, did not improve on Birmingham, and is an exception from the fact of there being too many cooks spoiling the broth. Those shows are a sort of Siamese twin affair, two managements in one. One cannot work independent of the other, nor the two together, and nothing but the buoyancy of public interest in gardening could save the management from breaking down. Manchester fruit-show is fresh in every one's memory ; it alone will in future mark the year as that on which the Lambton bunch of Grapes was shown.

The war of the Grapes has seen another campaign nearly finished. Unless the keeping battles be fought over again, there are a few sorts, which might be counted on the fingers of one hand, which nobody quarrels with, being faultless. There are other sorts to which faults are universally attributed. It has lately become the fashion not to abuse the faulty Grapes, but the stupid gardeners who cannot grow them. We do not admire this style of criticism ; it simply gags discussion : but where one has a bad case, the best course is, abuse your opponent's attorney. The upshot will be that the faulty Grapes will certainly go out of cultivation. Few now grow the old but excellent Grape Chasselas musque, from its being such a determined cracker, a constitutional fault—or the Golden Hambro, from its tenderness of constitution.

The Madresfeld Court, a magnificent Grape, has undoubtedly the same faults as the Chasselas musque, and we have known it crack grown in pots, with the laterals half cut through, or tightly pinched with a coil of wire. Much can be done for it by inarching on other roots, and it must be grown as an early Grape, instead of for winter or autumn, so as to ripen in the heat of summer. We find it crack least inarched on the Hamburg in an early house ; also as an autumn Grape inarched on an early stock, the Royal Muscadine.

Mr Simpson has done good service in calling so much attention to the subject of low night-temperatures for Vines. A high night-temperature is exhaustive and actually retarding to Vines, and other plants as well, under certain circumstances ; as at night the Vine ought to be recruiting strength for the following day's growth with the light and heat of the sun. Of course there is a limit to the night temperature under which it would be unsafe to descend. The same shrewd writer has, we think, hit the mark about the potato disease ; and he foreshadows the time when the Mid-Lothian farmer will

indulge in a potato-garden of 50 acres covered with glass, to supply potatoes with the beef he sends to the London market, a land of potato palaces : this is an idea for the future of Ireland. Seriously, the potato disease may, after all, be the result of meteorological conditions—some say electricity, some rain, some fog. The potato is a native of Peru, a perfectly rainless country, the high range of the Andes, according to Captain Maury, wringing every particle of moisture out of the trade-wind as it passes over the frozen peaks. No doubt the climate of Peru has determined it as the home of the potato, a case of natural selection ; and no wonder though our moist and cold soils have induced disease. This consideration fully bears out Mr Simpson's convictions on the subject.

Can any one explain how there came to be such swarms of bullfinches all over the country last winter and spring? they seemed to come suddenly in quantity as some insects are known to do—for instance, certain butterflies : did their numbers escape thinning from the mildness of the winter? We shot them in quantity, but still they came. Did they come over in flocks from the Continent, as wood-pigeons are known to do? But notwithstanding the scourge of finches, the fruit crop has been plentiful and fine, excepting Plums and Apricots ; indeed the Apple orchards seemed better for the thinning of their buds. The Apple crop in the south has been magnificent, and many fine varieties have fruited as we never saw them before in the north. The cider-machines have been grinding and squeezing, not by any means a cleanly operation, which we are able to view from our cottage window, and which makes us mentally vow never to drink another drop of cider ; but it is perhaps well that we have not seen all the processes of the kitchen before eating our dinner : even the making of wine is not a process of much nicety in its first stages.

Insect-pests are always a dread and source of much labour to gardeners. The phylloxera, which, however, we have never seen but in a woodcut, and do not wish to make further acquaintance with, has caused much alarm, and made gardeners very cautious about receiving Vines from nurseries. It seems proved that the insect can be imported with other plants as well as Vines. When this is the case, it will be difficult to prevent its gradual spread in the country. We all know from experience with mealy-bug how much care is required to prevent its introduction to a house, and when once there it is next to impossible to clear it. Has no one found a remedy against this soft-bodied insinuating pest, which has so large a circle of acquaintance? If we remember right, we were promised a wash for its eradication this year. Are there no more poisonous fumes than those of tobacco which can be used against insect-life and yet are innocuous to

that of the plant? There must be. Liquids there are, certain death to the genus *Coccus*, and quite safe on all but the tenderest foliage; but price is the obstacle.

This has been eminently a controversial year. There have been, among others, a little Pea war, and rumours of a great Pea war: the claimants among Peas are becoming very numerous, with plausible pretensions difficult to prove. We have Supremes and Superlatives, Alphas and Omegas, the best of all—and probably among them the worst of all. Some of them might be recommended to Jack as rivaling his Bean-stalk: some are conspicuous, like other claimants, for size. Somehow we cannot get over an old prejudice in favour of Sangster, Ringleader, Ne plus ultra, and Veitch's Perfection. Good things invariably make their way: of these are Osborn's Bean and Beet, and Veitch's Cauliflower and Dwarf Erfurt for all seasons—though not a new thing.

In flower-gardening the progress has still further been in the way of carpet-bedding, with a greater use of really hardy plants, and plants which require but slight protection in winter. Standard plants, such as Weeping Hollies or *Acer negundo variegata*, work well in with this style of bedding. *Sedum spectabile* and *Telephium roseum* are hardy plants which should be much more generally grown. Seed sown now will make nice plants for next May, to flower in autumn. The seeds are very fine, and must not be covered. Geraniums are becoming a drug, unless it be very dwarf sorts, which ought to be the aim of raisers for the present.

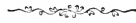
The *Calceolaria* disease has been very prevalent; but if *Calceolarias* were very much earlier planted in the beds than they are—say the end of April—we should hear less of disease. In the first bed we planted early in the bedding season, we did not lose a plant: of those planted late in May many were lost. The *Calceolaria* comes from a cool climate, high up on the Andes, below the snow-line, where the roots are constantly in a moist state from melted snow; so that the plant becomes quite paralysed by heat and drought, or by having the supplies cut off at the time of removal. The *Cineraria* sometimes suffers in precisely the same way; and the damping of the Chinese *Primula* is, we think, also explained in this way. It being really a moisture-loving plant, keeping it dry at the root to check damping really aggravates the disease. The Cucumber disease has also been very prevalent, and seems a more difficult matter to deal with. We think, however, that a brisk bottom-heat and a limited amount of soil to grow in would obviate the disease very much. We don't believe the disease follows the seed; but like the Potato disease, the *Calceolaria* disease, and other vegetable diseases, indoors and out, is more a climatic effect.

There are many more subjects which might be summarised as having been of interest during the year. Cowan's system of heating is one of great interest to many, especially to those situated on the chalk or limestone. Many are looking forward to the results of the experiment now in operation on the rim of the London basin, at Hatfield. It involves a principle which may yet be more extensively worked out—namely, the economising of waste heat from commercial manufactures. The waste heat from one blast-furnace would heat all the Vineries of a county.

One of the most useful inventions of the year in the way of appliances will be, we think, the new imperishable labels of Bell & Thorpe.

Space compels us to stop for the present, in the hope of being able to give the sum total another time.

THE SQUIRE'S GARDENER.



NOTES ON HERBACEOUS PLANTS.

WHEN ribbon borders and massing became the rage, we all remember how quickly the old herbaceous and mixed borders were effaced from the garden. In establishments where such borders had once existed, containing hundreds of varieties of plants—many of them worthless—scarcely half-a-dozen plants are to be found; and it is absolutely true that a generation of young gardeners has risen up during the time who are entirely ignorant of herbaceous nomenclature. The days of bedding-out in its extravagance are, however, doomed; for the tide is setting in with a force in the other direction that threatens to carry all before it. This is to be accounted for in several ways: first, the ever-recurring ribbon or panelled border is becoming stale—the patterns are almost worked out; then the agitation against the bedding system is beginning to tell; and last, but not least, Mr Disraeli has given the system a death-blow in 'Lothair' by his description of Corisande's garden, which has taken the fancy of the lady section of gardeners at least. Not long ago we were told by a noble lady that *we* (gardeners) could not stave it off much longer. She had, she said, just a little bit of "her own" in her large garden, and her gardener had all the rest;* but she was sanguine of better times when he became a convert to the new taste. We could not help thinking of the tyranny of gardeners, and of the aristocrat in 'Lothair' who, his lady said, was afraid of no-

* The gardener who attempts to exercise any such tyranny as is referred to here, is surely *rare*, and can have very little respect for his employer, and not very much for himself.—ED.

body but his gardener, and he *was* afraid of him ; and if we recollect aright, some very Jesuitical individual was employed to soften him down to a plastic condition.

The entire eradication of herbaceous plants from our gardens has, however, had one good effect—it has led to a sifting of the species. Before, herbaceous borders were botanical collections more than anything else—scores of plants having nothing but rarity to recommend them ; but now the aim is to select the cream of the class, such as are likely to afford both a display outdoors and cut-flowers for the house. For the latter purpose the herbaceous border is invaluable, especially in places where the supply of stove and greenhouse flowers is not ample. What could be more ornamental, for instance, than some of the Iris class, and the Lilies, such as *candidum*, *auratum*, *lancifolium*, and others? We have been cutting heads of the two last from August up till now (November 1st) from the open border, and find them unsurpassed for large vases. Then there are the *Spiraeas japonica*, *palmata*, and *venusta* among the best ; long-blooming and beautiful they are. The bulbous and tuberous rooted section also would almost stock a border itself. *Narcissus*, *Hyacinths*, and *Tulips* keep up a long display after the greenhouse stock is past and gone. The useful and beautiful, in fact, are too numerous to mention at random ; but the following list are amongst the most select of the really good herbaceous plants, and are such as we have selected within the last two years for stocking borders :—

Aquilegia, of sorts.	<i>Tritoma grandis</i> , and <i>uvaria glaucescens</i> .
<i>Delphinium formosum</i> , and others.	<i>Thalictrum adiantiforme</i> .
Carnations and Pinks.	Violets of sorts.
<i>Liliums</i> , <i>auratum</i> , <i>lancifolium</i> , <i>candidum</i> , <i>fulgens</i> <i>Sappho</i> , <i>umbellatum</i> , <i>Thunbergianum grandiflorum</i> .	<i>Aster amellus</i> , and <i>Cassiarabicus</i> .
<i>Lithospermum prostratum</i> .	<i>Aubrieta deltoides</i> .
<i>Lychnis</i> of sorts.	<i>Arabis</i> of sorts.
<i>Erythronium dens-canis album</i> , and <i>purpureum majus</i> .	<i>Iberis corresefolia</i> .
<i>Gladiolus</i> in variety.	<i>Hepatica, triloba alba, cœrulea, and rubra pleno</i> .
<i>Iris germanica</i> of sorts.	<i>Muscari botryoides</i> , and <i>botryoides alba</i> .
<i>Phloxes</i> of sorts.	<i>Narcissus poeticus</i> , and <i>Sulphur Kroon</i> .
<i>Cyclamens</i> , <i>Græcum</i> , <i>hederæfolium</i> , <i>Europeum</i> , and others.	<i>Scilla campanulata, alba, nutans, and rosea</i> .
<i>Violas</i> of sorts.	<i>Hyacinthus amethystinus</i> .
<i>Pyrethrums</i> of sorts.	Lily of the Valley.
<i>Primulas</i> of sorts.	<i>Menziesia alba</i> .
<i>Auriculas</i> of sorts.	<i>Dielytra spectabilis</i> .
<i>Ericas</i> (hardy) of sorts.	<i>Veronica</i> (blue gem).
<i>Cheiranthus</i> (wallflower) of sorts.	<i>Arenaria verna</i> .
<i>Chelone barbata Antwerpensis</i> .	<i>Polyanthus</i> of sorts.
<i>Dianthus hybrida</i> of sorts.	<i>Primroses</i> of sorts.
<i>Helleborus niger maximus</i> (Christmas rose).	<i>Daisies</i> (double), Red, White, and Pink.
<i>Hesperis matronalis</i> of sorts.	

The above list, which is simply copied from the borders without any order, does not nearly exhaust the stock of good things; but it includes the best species, and may serve as a guide to those who contemplate planting on a moderate scale. Neither have I given the varieties where they are numerous. The reader must select these himself. I may just mention the Iris and Phloxes as forming a numerous variety, many of them of great excellence. Such things as the Menziesias and Ericas are, of course, not herbaceous plants, properly speaking; but they, and many other dwarf shrubs, may very properly be added to the herbaceous border, and also Roses, Azaleas, and Kalmias, &c. All these we use as well, not forgetting even Rosemary and Lavender. In planting a border, and while looking after variety, general effect need not be lost sight of. The best plan is, first, to calculate the length of your border and the number of rows; then calculate the number of plants for each row; select the varieties according to their height and colour, and plant an equal number of each, or thereabout; planting alternately, so as to have each kind coming in in succession along the whole length of the border. As an example, a nice and effective front row is formed as follows: Plant about 12 feet apart or more, as the case may be, nice tufts of "Golden Feather" Pyrethrum alternately with *Viola cornuta*, white Arabis, and crimson Daisies. These four varieties themselves produce a rich effect in early spring and summer; and if the spaces between them are filled up with Auriculas, Dog-tooth Violets, Phlox prostrata, Grape Hyacinths, Scillas, Primulas, Pansies (blue and yellow), Violets, Menziesias, dwarf Heaths, Iberis, Cheiranthus alpinus, Aubretias, Cyclamens, Lithospermum prostratum, and other and later blooming species, sufficient variety and a continuance of flower will be secured. Most herbaceous plants will thrive fairly in ordinary light garden-soil. If it is heavy it should be lightened with plenty of leaf-mould and sand; and a few species should have a little special attention in the way of peat, leaf-mould, or sand, as required, just put round their roots. Slugs also must be watched. They are destructive to many varieties, such as Phloxes and Delphiniums, &c. In our soil here, too, we have a difficulty in getting *Lilium candidum* to grow. It is attacked by a small grub, just as the plant begins to grow, and the stem, and often the bulb, perishes. We are trying what planting it in sand will effect. A herbaceous border should never be dug indiscriminately. Light top-dressings forked in carefully with a steel fork, in autumn or winter, before bulbs and other things begin to move, will be sufficient in this way. During summer a hoeing occasionally will be all that is required. Raking I am no advocate for, nor a fine surface. A handy man will do all that is needful in the way of tidiness with a Dutch hoe.

J. S.

NEW OR RARE STOVE PLANTS.

Pandanus Veitchii.—There are a good many Screw-Pines in cultivation now, but none more strikingly ornamental than this. It is a variegated sort with broad shining leaves, banded and striped with bright green and clear creamy white. The old well-known *P. javanicus* is the nearest approach to it in style, but it quite eclipses that sort in its striking bolder beauty. It differs from *P. javanicus* in having wider and flatter leaves, and in the variegation being less regularly marginal: some leaves are nearly wholly white, others broadly margined with white, and some striped in an irregular way with alternate bands of white and green. The leaves are also less dangerously armed, the spines on the margin being small and few, while on the midrib there are scarcely any. The leaves are also shorter in plants of the same size than those of *P. javanicus*. It is vigorous and free growing, and one of the handsomest foliage plants of recent introduction. Small plants are particularly well adapted for table decoration, being both elegant and effective.

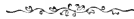
P. ornatus.—This sort has been longer in cultivation, but does not appear to be more generally distributed. It is more elegant, but not so showy. The style of growth is not so bold and vigorous. The leaves are narrow and comparatively short, but more numerous and densely crowded than in any other *Pandanus* with which we are acquainted, and they arch from the centre of the plant over the sides of the pots most gracefully; they are also deep olive-green, and armed closely on the margins with short white spines, which impart an interesting feature to the plant.

Monolena primuloides.—This is a very pretty stove herbaceous plant, belonging to the natural order Melastomaceæ, and nearly allied to the pretty *Sonerilla margaritacea*. It has a somewhat woody root-stock, whence spring the broadly oval, deep brownish-green, strongly-ribbed leaves. The flowers are supported on stout stalks, which raise them clear above the foliage: they are about an inch across, and bright rose pink. If kept growing, it may be had in bloom at almost any season; but it is most useful in the stove in the winter months, during which, if kept in an open light position near the glass, it will bloom continuously. The whole height of the plant does not exceed 4 or 5 inches, but it may be grown to any reasonable width. It should be grown in pans, or wide shallow pots, well drained, and slightly elevated in the centre; done in this way, it is a little gem of the first water, one of the most attractive things that can be placed on the margin of a stove stage.

Urceolina pendula.—This is a most distinct and beautiful bulb,

allied to *Eucharis*, but differing in a very marked degree from that universal favourite in the form and colour of the flowers. The foliage resembles that of *Eucharis* pretty closely in form and colour, but is smaller. The flowers are supported on stout, erect stalks, are pendulous, very slender at the base, but widening towards the centre, and becoming contracted and shortly reflexed at the apex. They are clear golden yellow, tipped with green and white. The plant succeeds well under greenhouse treatment, but is invaluable as a winter flower for the stove. For this purpose it must be grown on during summer and rested in autumn, for it requires a thorough dry rest for six or eight weeks; and when thus treated, it may be introduced in batches, in the same way as *Amaryllis* or *Eucharis*, into the stove to flower and to make growth, which should be briskly encouraged after flowering is over. It likes a strong rich loam. As a companion and contrast to both *Eucharis* and *Amaryllis* it is charming, and deserves to be better known and more generally grown than it is. It frequently, indeed generally, flowers without foliage, which is a drawback to its use as a table plant, for which it is otherwise admirably adapted; but this may be compensated for in a pretty satisfactory way by pricking the surface of the pot full of *Selaginella*, when it is brought into heat to flower. When done in this way, it is one of the most elegant things imaginable for fitting into small vases on the dinner-table or in the parlour.

A. X. E.



HINTS FOR AMATEURS.—DECEMBER.

THE pruning of all kinds of fruit-trees and bushes requires attention as early as time can be spared. It is not well to prune trees, especially those of vigorous growth, when frost is severe: Peaches and Nectarines may be left till February. Plums should have all natural spurs retained. These do well on the spur system generally, but not allowing the growths to get away from the walls; and the crowded method some adopt with their wall-trees is bad in every way, besides giving much unnecessary labour. When foliage cannot have plenty of room, scanty crops of inferior fruit may be expected. Morello Cherries should not be kept so thick as they frequently are. The short shoots are preferable, and the natural spurs which often form on established trees are generally very fruitful. When pruning of these is performed, leave enough young shoots to cover every vacant space; and where old rods may have become bare, they may be cut out and younger ones allowed to take their place, or young shoots may be lashed to old rods till they have grown sufficiently to fill their spaces. There need be no hurry in pruning Apricots. The same rule in re-

gard to well-placed spurs and short shoots studded with buds is applicable to them. Everything—shoot and spur—growing straight out from the tree, should be cut clean off; but if there are no shoots near the wall, the outgrowing spurs must be made the best of. Cherries generally do best spurred and treated similar to Pears—carrying the rods straight from the main stems, terminating equidistant. If Pears are growing far from the walls, they may be tied neatly to each side of the stems, and the larger spurs cut out. Many trees are allowed to run out of bearing by crowding the spurs. Moss growing on trees and bushes should be washed with a brush, applying lime-water and brine; but the bark should not be injured, and the liquid should not find its way to the roots. The dressing of lime does much to keep off bullfinches from the buds. Manuring old trees is often attended with good results. A portion of the old soil from the surface may be taken away, and a liberal dressing of rich stuff put in place of the old soil. But if the soil is cold and unhealthy downwards, and the roots encased therein, all the mulching which may be given will do no good, but rather harm. Planting should not be done in severe weather, as the roots of the trees just taken out of the earth are liable to suffer severe injury; and when the ground is in a puddle it need not be touched. There has been so much sound advice given recently by the ‘Squire’s Gardener’ and ‘H. R.,’ that the case of beginners generally may be met, and the writings referred to may be accepted as safe practical guides. Always keep in mind that healthy suitable soil, keeping the roots well up out of stagnant subsoil, proper drainage (not unnecessary), mulching to keep out drought, are objects of primary importance when trees are expected to grow and become fruitful. Some kinds suit certain soils and localities better than others. Save some of the strongest of prunings from fruit-bushes to make cuttings; lay them in the earth by the lower ends till they are made. Fork over all plots of bushes when they are pruned; deep digging among the roots is a great evil. A clear circle of a yard wide taken away from over the roots and replaced with rotten manure will help old Currants and Gooseberries much.

A general clearance of leaves may now be made: harvest plenty for hotbeds and manure. Rolling of lawns and walks may require frequent attention. Old gravel may be made to look like new by turning and rolling it. When walks are soft and the gravel rough it is a great annoyance. Shrub-pruning is often done now, as when left till spring the favourable opportunity for doing the work often slips past, and cannot be taken advantage of. It is a great evil when pruning is done to allow the shrubs to keep out the air by mere surface-cutting. A regular system of thinning should be put in prac-

tice ; and when this work is well done the cuts cannot be seen. Clipping shrubs (except to form hedges, and it is bad for them) should be avoided if possible. The taste for this has been long exploded. Hollies, Standard and Pyramid Thorns, and most kinds of Coniferæ, may be helped by timely and judicious cutting : that is generally necessary when the trees take to growing one-sided. Large naked Laurels, both common and Portugal, should be cut well down, and they will make a fine healthy growth.

Let Roses be planted in well-trenched ground well manured ; and a few spadefuls of fresh loam placed with the plants as they are planted will give them a vigorous start. Mulching is very important with all Roses, but especially when they are newly planted. Teas and tender kinds are better out of the ground during winter. They lift freely, and can be transplanted when frost is past. Those trained to walls and wires should not be left to the winds, and it is not judicious to prune them at this season. Long shoots not required may be shortened at present, but not cut close : a fresh lot of young shoots trained in yearly keeps the trees always vigorous, and the flowers are finer. Some kinds of the China class do not require short pruning, but to be thinned out, and the sturdy well-ripened shoots left ; neither do all other Roses require cutting back, but to be pruned according to growth, and strong-growing shoots do admirably when pegged down. Bulbs are all the better of protection in severe weather. Prepare Ranunculus beds by well digging and manuring them, leaving them rough to frost for the present. All planting of Tulips, Hyacinths, and Narcissus should now be finished. Bulbs in pots may be taken into heat as required and kept near the glass, giving plenty of air and light : a gentle bottom-heat helps them to grow strong. They should be removed gradually from heat to cool quarters. All shrubs for forcing, such as hardy Azaleas, Kalmias, Thorns, Lilacs, Deutzias, Forsythias, Rhododendrons, and suchlike, may be introduced freely into heat ; but strong heat may ruin them for this season. Lily of the Valley, Violets, Roses, Pinks, Dielytras, Weigelia rosea, Spiræas, and the usual favourites, may be taken into heat in batches as they are wanted. Cinerarias in flower will now require plenty of water, also fresh air ; and no stagnant moisture must be confined about the plants. Let Chrysanthemums going out of flower have shelter under glass ; keep them growing strong to get good cuttings. Fuchsias done flowering may be kept dry and free from frost. Young plants of them may be kept growing slowly, but in healthy quarters. Primulas which are liable to rot at their collars must be carefully watered and be allowed plenty of fresh air. Pelargoniums may be kept rather dry and rather cool. Dry fresh air prevents spotting. Camellias in flower now require more

water, but sodden soil will cause the buds to drop. Cytisus, Coronillas, Euphorbias, Acacias, Poinsettias, will come in well after the Chrysanthemums. Keep greenhouses and plant-pits dry and clean; 40° to 45° is warm enough. Use no unnecessary fire-heat.

M. T.



MELON - CULTURE.

THE Melon is a fruit highly esteemed in its season where a large dessert is required. Although, unlike the Grape, the Pine-Apple, or the Peach, it is not a general favourite, I think the principal reason for this is, that we so seldom get them in the highest state of perfection. A badly grown and ripened Melon is certainly the most insipid of fruits; but, on the other hand, when it is well grown and cared for through every stage of growth, it has qualities appreciated by some if not by all; and with the hope of helping the lovers of the Melon who have not had the opportunity of being made thoroughly conversant with its culture, these few remarks are penned.

Span-roofed houses we consider best for them, with a bed 18 inches deep on each side of the house, having a flow and return hot-water pipe right round for bottom-heat. Some prefer water-tanks, but with us they do well with merely the pipe. For early fruit the seed ought to be sown about the beginning of January in pots filled with rather free soil, the seeds only just covered, and plunged in a bottom-heat of 75° or 80°, with a minimum top-heat of 70°, or 5° lower in very severe weather. The soil will most likely have enough moisture in itself to cause them to germinate; but as soon as they appear above ground let them have water, and from that time until the fruit shows signs of ripening they ought not to be allowed to suffer for want of water. In from ten to twelve days after sowing, or when they have made the first leaf, they will be ready for potting off singly into 3 or 4 inch pots, putting them into the soil down to the seed-leaf by twisting them round the pot, if too long. Use stiff turfy loam, with a little leaf-soil and river-sand. In all subsequent pottings the loam without any mixture will be suitable. In making ready the bed for the first two plantings, put about 1 foot of stable-litter and leaves in the bottom of the bed, treading it in quite firm, and leaving it in a ridge along the centre, which will give a good natural bottom-heat, as well as put stamina into the plants as they advance in growth. For later successions we prefer half-rotted manure from the pig-yard, as there is more strength in it, and at this time there is less need of bottom-heat. After the dung is in, chop up as much good stiff loam as will cover the bed all over about 3 inches, the ridge to be 6 inches

deep for planting: as soon as the roots get nicely to the sides of the pots, let them be planted out, pressing the soil firmly to the roots. If allowed to remain in the pots until pot-bound, they become hard and stunted in their growth, and precious time is lost before they again recover the check. As they are planted, let each plant be tied to a stake, to prevent breaking in syringing, and keep the side shoots rubbed out until they reach the first wire of the trellis-work on the roof. Then they ought to be allowed to run within two wires of the top on south side and one on north side before stopping. The reason for pinching to the second wire is to let more light to the fruit on the opposite side. The fruit will be found at the first leaf of the side shoots: sometimes they fail in this, but if pinched back to the same leaf, they generally show next growth. As the flowers open let them be impregnated, choosing the time when most are open at once, as when one fruit gets much in advance of the others they seldom swell regularly. Three or four good fruit on each plant is a fair crop. When in flower, stop syringing overhead, but keep plenty of moisture on the paths and beds, as thrip and spider are apt to get a hold of them at that time, and in all cases prevention is better than cure. When the fruit require support, a thin piece of square board with a piece of copper wire at each corner will answer well. When the roots appear on the surface of the bed, let them have a top-dressing of the same soil as that in which they are planted until the fruit are fully swollen, when a top-dressing from an old Mushroom bed will keep the bed from drying up so quickly, and therefore less water will be required, and the evil of having cracked fruit will be obviated. 70° night temperature is sufficient in early spring, but as the season advances, 75° is not too high; or if the fruit is wanted at a given time, 5° higher may be resorted to with safety. The first batch, treated to the first-mentioned temperature, should ripen about the middle or towards the end of May: of course later successions, when the days are long and the sun has much more power, take a shorter time. The last week in June is quite late enough to sow for the last crop, which should ripen about the end of September and beginning of October: later crops are rather uncertain.

Thrip and spider are their principal enemies, and nothing but a constant application of the syringe will keep them from gaining a footing. If from neglect they get a footing, fumigating with tobacco two or three nights in succession kills thrip; but for spider, a little sulphur in the water when syringing will soon make them disappear.

The favourite varieties here are Royal Ascot, a beautiful fruit, oval-shaped and finely netted, scarlet flesh, flavour good, and a free setter. Lord Eglinton's Favourite is another very handsome and good-flavoured scarlet-flesh Melon, shape round, generally growing to about 6 lb.

weight. Heckfield Hybrid is sometimes rather shy to show fruit with us, but a good Melon. Incomparable, Lord Napier, and Malvern Hall are good, but Scarlet Gem is a gem indeed. Colston Basset is a good Melon in every respect. Munroe's little Heath we have grown,—the flavour was considered good: we cut fruit which weighed 8 to 9 lb.

A FOREMAN.

FLORIST FLOWERS.

THE POLYANTHUS (*PRIMULA VULGARIS*, VARIETY *POLYANTHUS*).

THE Polyanthus, though not clothed in the dazzling vestment of the Hyacinth or the Tulip, is nevertheless worthy of a quiet-sounding note of praise. Has it not been the inseparable associate of both for ages; sharing in just proportion their popularity (as has been demonstrated by the wide extent of its cultivation), as well as the admiration harmoniously awarded those favourite flowers? The Polyanthus in olden times was chiefly cultivated as a border plant, separately, and in beds, as also in pots under glass, for exhibition and competition purposes. In addition to these different modes, it is found that it is equally suitable for the embellishment of the conservatory in early spring, when that structure requires all the variety that can be collected to make it look gay. And the writer can assure those who have not experienced their effectiveness as such, that they will be surprised at their qualities after a fair trial.

The subject of our remarks, as argued by some of the best of authorities, is only a variety or modification, in form and colours, of the well-known wild Primrose (*Primula vulgaris*), which is a native of most countries of Europe, usually found growing in woods and sheltered lanes, particularly where the soil is clayey and moist. Besides the Polyanthus, it has been asserted that the entire family *Primula*, which includes *Auricula*, *Cowslip*, and *Oxlip*, have all originated from the same parentage, and that the great diversity in form and feature shown in the varieties is due to cultivation.

The common Primrose in its wild state is only, or with rare exceptions otherwise, furnished with "peduncles,"—namely, those delicate footstalks found each supporting a single corolla; but the result of cultivation has proved that, in addition to those peduncles, a short "scape" is attached, concealed deeply amongst the leaves; therefore it can easily be conceived how by the elongation of this "scape," or main stem, on the summit of which all the peduncles or flower-supports are clustered, the inflorescence of the Polyanthus and others assumes the umbel form, instead of retaining the original character of the Primrose.

Propagation.—This is effected either by dividing the roots, or by offsets, and by seed when it is desired to obtain new varieties. First, allow us to discuss its culture from seed. Some people recommend sowing the seed in July, just a few weeks after it has ripened. And their mode of procedure is to hang up the stems, with the seeds still in the pods, until sowing time, enclosing the whole in light paper bags to prevent accident. Our own plan has been somewhat different to that, inasmuch as we sow the seed in December, and place the pots or pans on a shelf in a cool house, where the seeds soon vegetate and grow steadily and prosperously. The seedlings are planted separately as soon as they can be safely handled, putting them in lines again into boxes, and replacing them on the shelf or under frames in a warm sheltered exposure. The soil ought to be principally rich loam, rather inclining to clay than sand, with, in addition, a liberal proportion of much-reduced cow-manure and rotten leaves; drain the boxes well, and any amount of water may be given them with impunity after the seedlings have taken to the new soil. On the occasions of bright sunshine, never fail to afford effective shade, and sprinklings of water. A dry atmosphere is sadly unfavourable to their health and growth.

General Culture.—Out of doors the Polyanthus will be found very accommodating. The aspect that suits it best is quite the opposite of most other plants. Give it a shady corner of the garden, with moisture beneath, without the soil being soused; neither is it fond of the drip from trees, which does not hurt the plants themselves so much as the flowers. Plant in lines, after the bed has been enriched with manure, and otherwise well prepared. The rows of plants should be one foot apart, and the plants stand nine inches in the row. As may be expected, few flowers will appear until the end of the succeeding summer, but the plants will be all the more benefited by that. The following spring will well repay the delay by the display of blossom and the vigour of the plants too. Thus much about beds—let us now consider, in a few sentences, their culture in pots.

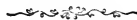
It is only required to plant singly into small pots the strongest of the seedlings when pricking out the others into boxes or pans. The same soil and attention to drainage is necessary—only, instead of returning these to the shelf on which they germinated, quarter them in a cold frame, plunged in sawdust, sand, or coal-ashes. By the beginning of summer those plants will be established in their pots, and in all probability will require a larger shift; this should not be neglected a day after it is necessary, it being very important that they experience no restraint by insufficiency of nourishment, or getting cramped at the roots. When potted, plunge the plants on the shady

side of a wall all the succeeding summer months, repotting again if required. The final shift ought to be into pots 6 inches diameter. Now, if massive succulent plants be the desired aim, never fail in the supply of water, both at the roots, and overhead from the syringe; and to have robust foliage is the certain promise of grand flowers. Replunge them in the frames, where they may be benefited by the autumn sun. The object now being to assist the formation of the flowers in the crowns, less water will, as may be supposed, be required from this stage onward till spring, when fresh growth takes place; then the plants must be stimulated by a top-dressing of fresh loam and rotted cow-manure in equal proportions, giving them a soaking of water subsequently. Water without stint, never once allowing the soil to assume dryness; remove the withered leaves, sprinkle overhead in the afternoon of sunny days; and above all, ventilate well, taking off the sashes all day long, unless in frost or storm. As the flowers begin to open, transfer them to the conservatory, allotting them a shady stance. By following these instructions a succession of flowers may be obtained from March to June: this has been the writer's experience.

THE HARDY PRIMROSE.

The Primrose requires the same cultural routine as that advised for the Polyanthus, and there are many choice varieties worthy of careful cultivation, their habits being both dissimilar and characteristic, independent of other attractive merits.

The following selection may be relied upon as being superior for pot-culture:—*Primula Japonica*, in variety. *P. verticillata*, half-hardy, a most profuse blooming and distinct form; the foliage is dusted densely over with white powder, as also the flower-stalks; flowers small, rich sulphur-yellow, borne in pointed spikes from six inches to a foot high; flowers under glass in April and May. *P. cortusoides*, *P. cortusoides alba*, *P. cortusoides amœna*, and *P. cortusoides amœna alba*. There are two varieties of this white, one a mere weed, the other handsome and beautiful in its flowers, which are in appearance like immense snowflakes, with almost the texture of *Bouvardia jasminoides* in petal: *P. nivalis*, *P. spectabilis*. Of the old doubles I need say little: enough that we know that there are double yellow, double crimson, white, lilac, and other shades, all doubles. A. KERR.



APHELANDRA AURUNTIACA.

THIS is one of the most brilliant and effective of winter-flowering plants. It produces its warm orange-scarlet spikes of bloom about the beginning of November under ordinary plant-stove treatment. And they are not only among the most brilliant of stove-flowers, but they last for weeks in bloom in a moderately dry atmosphere. It associates well with softer colours, and no stove should be without a few plants of it. Being rather stiff and erect, it is very effective mixed with plants of a more loose habit, such as *Calanths*, which are generally in bloom at the same time. The *Aphelandra* has the additional recommendation of being easily grown. After it has bloomed it should be rested till the middle of February, by being kept moderately moist in a temperature of 60°. At the above date, turn the plants out of their pots, and slightly reduce the balls, giving them a very moderate shift, and using a compost composed of equal portions fibry loam and peat with a little silver-sand. Throughout the summer it should be kept near the glass in a moist stove-heat, and be syringed freely overhead every fine day. It is a comparatively slow-growing plant, and one that does not require large pots. Plants in 6-inch pots will yield ten and twelve of its most beautiful bloom-spikes. When in bloom, the winter atmosphere of the Orchid-house or warm Fernery suits it well.

A. nitens is also a most effective plant, producing rather longer spikes of bloom. It does with the same treatment as *auruntiac*.

D. T.



NOTES ON GREENHOUSE SHRUBS.

Burtonia.—These are rather troublesome little shrubs to grow, but quite pretty enough to induce an ardent plant-grower to try, and they reward him if he succeeds in growing them to perfection—a point he is sure to attain if his ardour is well directed. One of the most important points in their management is watering: they are peculiarly impatient of anything like a water-logged condition of soil. Therefore see to the drainage, that it is adequate to begin with, and that it is kept in good condition afterwards. It is also requisite that the soil should be of a porous yet firm and even hard texture. Fibrous peat and loam in equal parts, with gritty sand, very small nodules of charcoal, added in such quantity as will render it free and open, is a very suitable compost, and it should be packed very firm in the process of potting. A greenhouse temperature of from 45° to 50° is necessary in winter; and in summer when making their growth they will bear a good warmth, with light dewings from the syringe after scorching bright days. In such weather they should have a little shade; it should not be dense, but be given them for about four hours

in the hottest part of the day. Cuttings are somewhat difficult to strike; but when they are attempted, the shoots should be just beginning to harden, and be inserted in sand in a mild bottom-heat and a cool atmosphere under a bell-glass. They usually produce seed; as many of these as are wanted for propagation should be allowed to ripen, and the rest removed so as not to tax the energies of the plant, which after flowering should be allowed to be expended on the growth.

B. conferta.—A close-growing twiggy plant of small growth, with smooth simple linear leaves densely crowded on the branches. The flowers are violet, produced in clusters at the extremities of the branches, and appear in early summer, and last till late. It belongs to the family Leguminosæ, and is a native of S.W. Australia.

B. pulchella.—Like the last, this sort is twiggy in habit, and the branches are closely clothed with narrow linear sharp-pointed leaves, and with a grey-green powder. The flowers are borne in the axils of the leaves, chiefly at the extremities of the branches. They are purple, and appear in the spring months. Native of Swan River.

Callistachys.—This is a group of easily-cultivated and handsome shrubs. They are of rather free and vigorous habit, and consequently better adapted for furnishing large greenhouses and conservatories than small ones. Sandy loam and fibrous peat, the former predominating, is an agreeable compost to them. A temperature of 40° to 45° in winter suits them best. They belong to the order Leguminosæ, and are natives of New Holland.

C. lanceolata.—This sort grows to the height of 3 or 4 feet. The leaves are opposite, usually in threes, acutely lanceolate, and fringed with fine silky hairs. The flowers are yellow in terminal spikes, and open in summer from May or June till August.

C. ovata.—This is of closer growth than the last, but equally vigorous. The leaves are ovate, broader at the point than the base, produced in opposite threes, and silky on the under side. The flowers are yellow in terminal clusters, opening about the same season as the last.

C. longifolia.—This is one of the largest growing and most vigorous of the group. It has long lanceolate leaves, and terminal spikes of yellow and purple flowers, which appear in summer.

C. retusa.—This sort is dwarf, and rather diffuse in growth. The leaves are obovate, the points very blunt, and terminating in a fine spine-like point. The flowers are reddish, in terminal spikes, and appear in the summer months.

C. linearis.—This grows with nearly as much vigour as *longifolia*. The leaves are linear, distinctly netted. The flowers are yellow, in loose terminal spikes, and open in the autumn months. W. S.

GOLDEN CHAMPION GRAPE.

It is pleasing to learn that this fine Grape is holding its own where cultivators have learned its requirements. But where there is prejudice and absence of patience with those who have attempted to grow it and have failed, this Goliath among White Grapes will be shown no quarter!

Among those who have been successful with its culture, Mr Finlay, gardener to Colonel North, at Wroxton Abbey, in this county, appears to be well advanced. In Mr Hibberd's report in 'The Gardener's Magazine,' of the last fine show held at Banbury, the Golden Champion excited great admiration, Mr Finlay having produced marvellously fine examples and exhibited them in his collection of fruit. All his dishes are said to have been fine, but his "Champions" out-distanced all others, and made quite a feature in the exhibition-tent. What the preventive from spotting is, it would be of great interest to learn.

Dry air circulating through the Vinery while the fruit is finishing, I can endorse as being a very important matter. Another thing worthy of attention is to secure fibry roots instead of those very fat white ones which must pump up large quantities of water into the berries; and we know that, when this is the case, there is an absence of saccharine matter, hence the non-keeping quality of the fruit. The Golden Champion is planted in two Vineries here (the borders are comparatively new, and appear to have been made by those who understood their work), and one lot of fruit ripened early in June, and were sent to London along with Foster's Seedling and Black Hambros. They were ripened when the weather was dry and warm, a current of air passing through the house night and day. The fruit all finished well, and the Champions were very large in berry, of fine colour without a spot, and they appeared as if they would have kept well. The wood was of moderate growth; the foliage large and firm. The other lot of Champions were ripened in August; the sun shining on them seldom for weeks together, and almost continued rains, seemed to be much against the quality of the fruit. These Vines were gross in wood and leaf; the berries were very large, but did not colour well. They began to show black spots as the process of ripening went on, and shortly after they were ripe shrivelling began to appear. But the fruit were all sent to table without loss; and from the great size of the berries, and the refreshing flavour, they gave great satisfaction. The results were very different in these two Vineries, though a glass partition only separated the Vines, and there were two months between the period of their ripen-

ing. It is my intention to find the most active roots of the delinquent Champion, and place in front of them a quantity of stones and brick-rubbish rammed hard, which will cause each tapeworm-like root to separate into scores of threads before they force themselves through the barrier. By this means I secured fine fruit from a Golden Hambro, which yielded plentiful supplies for a number of years, and kept quite as well as the Black Hambro.

We are too ready in casting off a Grape which will not attain perfection under the same treatment as the Black Hambro. At an extensive place a few miles from here, the gardener was to root out his Lady Downes Vines because they did not behave well in the same house where Alicants were excellent. There was, no doubt, a cause for this, though for the present it remains in obscurity. Still I would be inclined to try and find out the cause before destroying the growth of years, and intend trying a few experiments before I destroy the "Champions," so well established here before they fell into my hands.

M. TEMPLE.

BLenheim.



I BEG to offer my opinion of this Grape, it being one I very often meet with in my travels. I cannot help thinking that the reason some people fail in its culture is owing to their not ripening it early in the season while there is plenty of sun-heat. Ripened early, it will hang until it shrivels and becomes a perfect sweetmeat. I have this season seen it doing well with Mr R. Gilbert of Burghley, and many other gardeners speak highly of it. I tasted some berries grown in the Muscat-house at Chiswick, and they were most delicious,—a remark which applies to others grown at Newark-on-Trent, Notts, and sent me by Mr W. P. Ayres. Golden Champion will always be grown for its superb appearance and excellent flavour, while the only fault its worst friends can find with it is an inclination to spot *under some modes of treatment*. That it is possible to grow it without spotting we know, and it deserves a place in every early Vinery.

F. B. W.

[Nearly all Grapes require special treatment, and, of course, so does Golden Champion.—ED.]



ABOUT ADIANTUMS.

SOME people are passionately fond of Ferns,—lovers of all kinds, whether exotic or indigenous, whether of plain appearance or the most beautiful. We doubt if there be many, comparatively, who are not

fond of Ferns ; there is something so elegant, graceful, and chaste about many of them, that they are sure to attract the attention even of those who care but little for flowers generally. We must confess to a feeling of "softness" towards these paragons of gracefulness ; but none of them, as a whole, do we like so much as the subject of the present paper. The genus *Adiantum* contains a large number of species, many of which are very distinct in character ; the treatment required to grow them well also differs considerably in the case of some species, some doing best in a strong and moist heat and thoroughly shaded, whilst others are most at home in a cool temperature, and nowise averse to a little sun, if it be not too powerful. They luxuriate in a compost of equal parts fibrous peat and turf, with a liberal admixture of coarse sand : bits of charcoal or coal-ashes that will not pass through a $\frac{1}{2}$ -inch sieve are also of value in the compost. Some of the smaller-growing species do well in small pots ; but to have the stronger-growing ones in perfection, they must be liberally treated in the way of repotting. For exhibition purposes, some of them are very fine—such as *Farleyense*, *formosum*, *cuneatum*, *curvatum*, *concinnum latum*, *trapeziforme*, *Sanctæ Catherinæ*, *tenerum scutum*, *pedantum*, *assimile*, *amabile*, and *capillus-veneris*. There are also some newer sorts which we have not had experience with, which are said to be fine for exhibition. Some cultivators dry off their plants in cold houses in the autumn, letting them lie dormant through the winter till early in spring, when they are started into growth and repotted, growing them on in a brisk heat, thereby getting magnificent plants up for exhibition in summer. But where there is not a strong heat at command early in the season, it is best not to dry them off at all, nor to pot them in the spring, the end of July being as good a time for this operation as any. Of course, in the case of plants which are being grown on from small plants to specimens, this mode of treatment must be modified to suit the case. Take, for instance, a plant which has been potted into a 6-inch pot in spring ; in summer it will require shifting into a 10-inch pot, and kept growing on without check from any cause. For the following spring repot into a 12 or 15 inch pot, and again in summer into a 15 or 18 inch one, as the case may be. It will not require anything more till the following summer, when the inert soil may be picked off round the ball of the plant, repotting in the same-sized pot. *Adiantums* do not root deeply, and accordingly require the pots well filled up with drainage, more especially so in the case of large-sized pots. They are all more or less adapted for house and table decoration ; *Farleyense*, *cuneatum*, *amabile*, *tenerum*, and *concinnum*, being best adapted for this purpose. The subjoined list of species contains only those with which we are acquainted, and is not given as being by any means com-

plete: however, it may be of use to some whose experience is not so large as our own.

Farleyense, when well grown, holds first place in its class. It requires a very strong moist heat to do it well, and to be shaded from the sun; treated thus, with liberal pottings, it is a fast grower, and develops large fronds and beautiful pinnæ. Cuneatum is the commonest of all, and is one of the most useful plants in cultivation. It succeeds in any temperature, from that of a greenhouse to that of a very hot stove, which latter is best for getting up plants for exhibition. Tenerum is an exceedingly graceful species, and very fine for table decoration. Tenerum scutum, when well grown, produces very large fronds. Both these species require a moderate stove temperature. Colpodes is a remarkably delicately-fronded species, the young fronds being delicately tinted; too much damp, combined with a temperature as low as 60°, is injurious to it in winter. Decora, a congener of cuneatum, is a most useful sort for cutting from, and of the easiest cultivation. Amabile, in general appearance, resembles the old assimile, and is one of the prettiest and most graceful of Ferns. The drooping character of the fronds, the delicate black rachis, the almost transparent pinnæ, light green in colour, and its obliging behaviour under cultivation, all combine to make this a first-class species. Capillus-veneris, indigenous to Great Britain, though very rare, requires a place under glass, and is suitable for exhibition purposes. Capillus-veneris Daphnitis we cannot say much about, as our plant is very small as yet; so far, it looks more curious than beautiful. Sulphureum has the under sides of the pinnæ covered with a golden-coloured powder; it likes plenty of heat. Excisum multifidum is one of these crested abnormalities which have become so common amongst Ferns of late years. It thrives best in a strong heat. Excisum Leyii is one after the same style, though rather more divided. Macrophyllum is a most distinct species; the young fronds are tinted: requires a strong heat, and to be shaded well from the sun. Concinnum is another distinct species, and most beautiful; the fronds are arched as compared to drooping, and have a character entirely their own. It is seldom seen in good condition, though it is not difficult to manage. Concinnum latum is broader in the fronds, stronger and more erect in growth, though not nearly so attractive as the last; it makes a good plant for exhibition. Trapeziforme is one of the finest for exhibition purposes. It does not require a strong heat, but it must have liberal treatment at the root to induce it to throw up large fronds. Sanctæ Catherinæ is another fine thing for exhibition, throwing its fronds up thickly, and in great numbers. Formosum is one of the very freest growing and useful of Adiantums:

a strong-grown plant is most effective. It is also one of the most useful for cutting from. *Curvatum* is another indispensable species : it is quite a treat to see a good plant of this. The fronds grow in sets, one set growing a few inches above the previously developed one. The pinnae are curved backwards, and in the young state are of a metallic olive-green colour. *Curvatum* must be grown in dense shade to prosper, the least glimpse of sun effectually destroying its beauty. *Setulosum* is a small-growing and lovely species, the fronds having the same metallic lustre as the last. *Pedatum* is a handsome cool-house species, and suitable for exhibition. *Hispidulum* is another of the same section ; the young fronds are coloured : altogether a nice species, requiring a stove temperature to do well. *Pubescens* and *diaphanum* are in general appearance much alike, though quite distinct ; they are both useful for cutting from, and do best in a stove. *Caudatum* is distinct from all others we know. It may be grown in a basket or a pot suspended in the stove.

It must be borne in mind that although this genus does not object to a humid atmosphere when growing, yet they decidedly object to being syringed : they ought to have a side of the stove, or wherever they are grown, entirely to themselves, associating *Gymnogrammas* and *Nothochlænas* with them. Green-fly sometimes infests them ; in such cases gentle fumigations with tobacco must be resorted to ; but the more delicate species especially are averse to tobacco, therefore great caution is necessary in using it. Scale will be troublesome only if it is allowed to prosper on other plants in the same house, and must be carefully destroyed, without injury to the fronds.

R. P. B.

WINTER BEDDING.

IN the interesting article on "Winter Bedding" in your last number, I observe "*Daphne cneorum*" is recommended for that purpose. Allow me to protest against such an abuse of this plant : it hates being meddled with, and particularly at this season. Although its dwarfness might tempt the employment of it for edgings, its habit is quite unsuitable for that purpose, and I venture to assert that a permanent place, in a not prominent bed, where it can have the peat it loves, and be left undisturbed, and with room to layer it, is its right place ; and for winter work, plants less scarce than this delicious old *Daphne* has become, should be used.

Again I have failed to see or hear of "*Skimmia Japonica*" keeping on its berries during the winter, either in England or Scotland ; and to all my inquiries the same answer is invariably given, that they drop off. For a winter drawing-room plant it is invaluable, better in

severe frost than "*Ardesia crenulata*" and other stove berried plants, and having its fragrant flower-spikes at the same time as its berries.

I wish more amateurs were in the position to consider 18s. per dozen cheap; but even if the beautiful *Retinosporas* were down to 4s. per dozen (the orthodox price for either *strictly* winter or summer bedding plants), it remains to be proved that they are thoroughly hardy. In this neighbourhood, although so near the sea [nearness to the sea is a disadvantage to many plants.—Ed.], they are soon spoilt, if not protected; and spruce branches and bits of mat are inadmissible in flower-beds, where the object should be perfection for the particular season they are planned for: therefore, keen advocate though I am for winter-gardens, variety, and experiments, yet still I think it would be rash for the amateur to plunge into dozens of these lovely *Coniferæ*, which are still expensive, and not proved.

I believe I am correct in stating that no variety of Box was injured in the severe winter of 1860-61 (the seven sorts here in the winter-beds were quite unhurt that season): they are the most patient tribe of shrubs, and bear knocking about, owing to their matted compact roots. There is great variety in their growth, erect, round, and weeping, gold and silver variegation, and their small leaves are a great point for winter. We all know the effects of sun after severe frost on the young shoots of Portugal and other Laurels even in ordinary winters, and yet these (when small) unpicturesque evergreens are recommended, as likewise *Rhododendrons*, for their foliage, and the Box tribe is not named.

Referring to my memoranda, I find it is very seldom we have the *Laurestinus* two years in succession fine. We have large bushes, which by February are pretty with their pink buds, and a mass of white later in the spring; but to trust to young plants flowering in the winter-beds has been always an utter disappointment. I don't think in this country the *Laurestinus* nor the *Niger* varieties of the Christmas Rose are used enough for entrance-halls, corridors, and cold positions. The slightest protection insures the enjoyment of their flowers, and they both pot up well, and stand very long in the house.

If room is found in the next number of the 'Gardener' for these remarks, I beg to say I make them with no love of carping or fault-finding, but from the honest wish that amateurs—who are much given to follow in a line like sheep, and with whom seeing is the rule and really observing the exception—should seize hold of certainties and not risk disappointments. Few amateurs persist after one season's loss with a plan or plant; and notwithstanding winter and spring bedding has now got a firm and wholesome hold of the public mind, it is not the many, but the few, who can persevere under failures.

CUCUMBER GROWING.

IN the September number of the 'Gardener' you published a few remarks on a mode of growing Cucumbers for market: we very much regret to find that there was an error as to the sort mentioned as found best for this particular purpose. It was there stated to be Sutton's Perfection; we now find it is Sutton's Champion, a variety brought into notice perhaps a dozen years ago.

On visiting our industrious friend a few days ago, he gave us this information, as well as a little more. We found him busy repairing, cleaning, and getting ready for the coming season. As there is but little demand for Cucumbers at this season, we found the structure empty except one division, where there were a few old Plums and some good fruit hanging; also a goodly stock of young, healthy plants ready for the troughs. To show that the most cautious may err;—a few plants had been put out, but as a brick flue had just been built instead of the old socket-pipes, and the work had not had time to dry, the fumes given off had destroyed the plants. The good man took it very patiently, said he was glad it was not his best plants, and that he had plenty more to replace them. Here was philosophy and prudence. He submitted to what could not be helped: he was provided against contingencies. Nothing so likely to happen as the unexpected. In again discussing his mode of growing, he said, no doubt he was successful, but then he gave his time and attention to it. A gentleman's gardener, with fifty other things on hand, would be almost sure to fail. He never had spider, thrip, scorching, or anything else amiss with his plants; but were the soil once to get dry, he would soon be eaten up with insects, and the plants fail. This witness is true. This great fact is applicable to all artificial plant-growing and forcing operations. Every gardener capable of reflection knows that these pests are the result of neglect. We do not say that the attendant is always to blame—men often have more than enough exacted of them; but in many cases these things arise from ignorance or misdirected energy.

With proper attention, the trough system has many advantages; the small amount of soil induces moderate growth and fruitfulness, with fair-sized fruit, which is more saleable than very large ones. We could never see the good of very large Cucumbers for a family. What is not used at once is generally wasted, and the amount of energy required to produce a brace 24 or 27 inches long would produce at least double the number of fruit from 15 to 18 inches, and these are ample for ordinary purposes.

S. X.

BEDDING PLANTS IN THE WESTERN ISLES.

FEW plants in general use for the decoration of the flower-garden, in wet stormy climates especially, will, I venture to assert, maintain their reputation so creditably as the bedding varieties of the Pansy. My experience with them, at least in this, one of the most distinguished of the British Isles in the above respect, leads me to such a conclusion. Taking into consideration the facility of increasing the stalk, which is in fact next to no trouble at all here, as the young shoots root over the ground in all directions, so that it is only necessary to lift and winter them in boxes or other convenient means; on this, and also on account of the long period they continue in bloom, few plants are more worthy of space in the flower-border, particularly where the means of keeping half-hardy stuff is limited. Imperial Blue is, beyond all doubt, a superb variety, and should have a place in every garden in which Pansies succeed moderately well. Planted early in April it soon after that began to flower, and up to this date, 25th October, it has bloomed without intermission. Cliveden Blue is still flowering profusely, but has not kept up a continuous display, as has Imperial Blue. *Viola cornuta Perfection* is another grand addition to the list of *Violas* for a stormy place. It also has done famously this season, but appears now to have exhausted itself. *Viola lutea*, cl. *Massiffs*, has not come up to the blue varieties, having grown more grossly. Plants that are used for their foliage are not the least satisfactory in such a place as this. The following, though rather common, are at once storm-proof and effective when arranged with their complementary colours—viz., *Cerastium tomentosum*, Dell's Beet, and *Cineraria maritima*. The latter appears to be quite a hardy plant here, and survives the winter in the open border. The same, by the way, may be said of certain varieties of the *Fuchsia*, and of *Hydrangeas*. About the beginning of November 1872, I counted over 40 trusses of fully-expanded flowers, if I remember rightly, on a huge plant of a *Hydrangea* in a neighbouring garden here, and even up till Christmas there were a goodly number of trusses on the same plant. To the foliaged plants used *Geraniums* remain to be added, the varieties of which were *Sophia Dumaresque*, *Perilla*, *Mrs Pollock*, and *Louisa Smith*. These, I am glad to say, all did their part much more satisfactorily than the flowering varieties; but I should have mentioned in a former paper that *Vesuvius* formed a slight exception, as it threw its few trusses well above the dense foliage. *Roses* succeed admirably, and are worthy of being extensively grown for general decoration. Conspicuous as free flowerers in the Hybrid perpetual class are, *Senateur Vaisse*, *Géant de Batailles*, *Baroness Rothschild*. Among others, in an additional lot planted last spring, was *Marquis de Castellane*, which apparently yields fine full flowers. *Souvenir de la Malmaison*, and *Gloire de Dijon*, are indispensable in the Bourbon and Tea section. There are two or three annuals we think worthy of being mentioned, and *Nemophila insignis* is one in particular. I can endorse all that was said in behalf of this favourite annual in the 'Gardener' of December 1872: I used it this year as a substitute for *Lobelia speciosa*, and must in justice give it the preference for free flowering. With the view of securing a display of bloom from August onward, I did not sow till the beginning of June; it has been in fine bloom since the middle of August, and should we be favoured with moderate weather, will be effective a few weeks longer. *Tagetes signata pumila* is well worthy of a place; it, however, to our disappointment, outgrew *Perilla Nankinensis*, planted amongst it. It does not suffer so much from the storms as do *Calceolarias*; but, on the other hand, from the rank character of its growth here, it is

longer in producing effect than the latter, thus rendering it more suitable, perhaps, for a mixed border than for grouping; when at their best the plants presented a compact sheet of bloom. Phlox Drummondii and Saponaria are found useful; the latter last year was in good bloom in December. I shall refrain from occupying your space further with other things of minor importance.

ISLAY.

D. MACKIE.

NEPENTHES HOOKERII.

WE presume that botanists have some reason for assuming that this magnificent, and we may say distinct, pitcher plant is merely a variety of *N. Rafflesiana*. They are, nevertheless, as distinct as most other *Nepenthes*; and where a select collection of these interesting plants is desired, the presence of *Rafflesiana* should never exclude *Hookerii*, for the latter is to our mind one of the, if not quite *the*, most interesting pitchers in cultivation. It is a more compact and robust grower than *Rafflesiana*, and it produces much larger pitchers. Generally on healthy plants they measure about 4 inches by 3 inches. The colouring is very striking, being a light green ground, splashed and spotted with reddish brown. Being of greater substance, the pitchers of this variety last longer than those of *Rafflesiana*. Their singular-looking hair-fringed frills, extending from the base up each side of the pitcher stalk to their mouth, and the beautifully marked lid, add much to the interesting aspect of the pitcher. *N. Hookerii* should certainly be in the most limited and select collection of these curious plants, which deserve more attention from possessors of plant-stoves than has hitherto been accorded them.

D. T.

OLD-FASHIONED PLANTS.

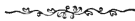
HABROTHAMNUS.

It seems to us that amid the plethora of new plants, fruits, and vegetables, and the existing rage for novelty at any price, horticulturists are in danger of forgetting or ignoring old favourites, equal, and in many cases superior, in point of beauty and usefulness, to those by which they have been supplanted. In how many greenhouses or conservatories, for example, will we find nowadays well-grown specimens of *Habrothamnus elegans*, with its broad fresh foliage, and clusters of waxy bell-shaped carmine flowers; its twin sister *H. aurantiacus*, equally gay in orange-coloured blossoms; or any of the other species of the genus, which though, to our thinking, scarcely so showy, are nevertheless fine decorative plants? Yet these were the glory of our conservatories twenty-five years ago, and notwithstanding the many brilliant accessions of the past few years, these two have not yet in their own way been eclipsed.

They are evergreen shrubs, with a rambling, vigorous habit of growth, belonging to the natural order Solanaceæ, and are natives of Mexico and Central America, from whence they were introduced into British gardens about the year 1844. Though of easy culture in pots, and very beautiful in the comparatively limited accommodation afforded by an ordinary greenhouse, it is as pillar shrubs planted out in the border of a lofty conservatory that we would recommend them: as such they have few rivals, and may be so managed as to have them in flower during the greater part of the year. In regard to soil, a good compost may be made of two-thirds rich turfy loam, not chopped too fine, and one-third well decomposed leaf-mould, with the addition of as much sharp sand as will keep the mass sufficiently porous to allow the water to pass off freely. The pot or border should be well drained, as any stagnation or sourness at the roots is fatal to success. During the growing season a plentiful supply of water should be given, and an occasional dose of weak liquid manure will add greatly to their luxuriance.

As these plants flower on the shoots of the preceding year, they should not be pruned till after they have done flowering, and then the weakest shoots only should be cut in, the others merely shortened; and if the operation is performed at intervals, that is, only shortening a few shoots at a time, the flowering season will be very much protracted; while in cases where a number of plants are grown, an almost constant supply of flowers can be had by pruning at different seasons, and allowing the plants to have their periods of rest and growth in succession. Not the least important feature of these fine shrubs is their fruit, which occasionally ripens under conservatory treatment, and is very ornamental, hanging for a long time after it is in perfection. Like all other plants of their tribe they are easily propagated from cuttings, which if put in sand or light soil in spring or summer will root in a close place with a little heat as readily as a Fuchsia or Geranium.

OMEGA.



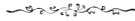
COWAN'S LIME KILN HEATING.

ON Saturday, this system of heating was commenced and tested at Niddrie House, near Edinburgh, in the presence of a number of the leading gardeners of Scotland, and the working of the system was considered a great success. 2000 lbs. of pipes were heated with great steadiness, and satisfaction to the large number of inspectors. Having already illustrated and described the system, we will not here enter into details.

Obituary.

We are very sorry to have to announce the decease of Mr JOHN TRAIL, of Aberlady, on the 4th November. His particular sphere in gardening was in connection with florist flowers, and especially with the raising of many of the finest Auriculas which have ever been raised. Although he was famous for this specially, he was an ardent lover of flowers in general. His character as a friend and neighbour was most estimable and lovable, combining the earnest desire and effort for the good and comfort of all with whom he had anything to do, with a meek and unassuming manner.

Mr ROBERT FISH, the well-known horticultural writer, has also gone to his rest. As a practitioner in general gardening, Mr Fish's career was most successful; flower-gardening especially owes him much. As a horticultural writer for thirty years, he had few equals in the kind, happy, and clear way in which his instructions, both practical and philosophic, were imparted. He was a good and kind man, ever ready with a cheering word and a helping hand, to all with whom he came in contact, and was highly respected by all who knew him.



ROYAL HORTICULTURAL SOCIETY'S NOVEMBER EXHIBITION.

(From our London Correspondent.)

THE meeting of the 12th and 13th inst. was one of the most interesting held for some time past. Chrysanthemums, fruit, and Potatoes were largely represented, and excited considerable attention from a large number of the leading horticulturists who were present on this occasion. The collection of hardy fruits was the best seen for some time; indeed it is questionable whether a larger or finer collection of Apples and Pears was ever exhibited than that staged by Mr J. Scott of Merriott Nurseries. This magnificent collection contained nearly 1000 varieties—viz., 600 kinds of Apples and 350 sorts of Pears, besides 20 or 30 varieties of Crabs, some of which were edible and others ornamental only. Since the fine collection of fruit-trees was broken up at Chiswick some years ago, this remains the only collection anything like complete for purposes of pomological research. Of course we have the noble trade collections of Rivers, Dancer, Smith, and others, but these grow the best and the most prolific kinds only; while in the fruit-grounds at Merriott every known variety is introduced and cultivated for purposes of trial and comparison. One of the most interesting features in the exhibition, from a pomological point of view, was an excellent new white Grape raised by Mr J. Pearson of Chilwell Notts. It is the result of a cross between Black Alicante and the white Strawberry-flavoured Ferdinand de Lesseps, a seedling raised by Mr Pearson some years ago. The foliage is large and of great substance, not unlike a fig-leaf in texture, and is borne on long purple-tinted stalks. The skin is thick and of a fine golden colour, so that its name, "Golden Queen," is very appropriate. It possesses a good constitution, and will doubtless take up a good position among late white Grapes. Were it not for its light colour, it might be likened to Madresfield Court in form and size of both bunch and berry; and the flesh is firm and crackling, and of a rich sugary flavour. Apples were generally very fine; and some magnificent specimens of this fruit, grown on the French Paradise stock, were exhibited by N. Laurie, Esq. of Hayward's Heath, Sussex. These were the produce of cor-

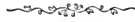
don trees, and consisted of Calville Blanc, one specimen being 15½ inches in circumference and 1 lb. 4 oz. in weight; Belle du Bois, 15 inches in circumference and 1 lb. 7 oz. in weight; together with excellent specimens of Belle Josephine, a noble fruit nearly like Blenheim Orange, Belle du Caux, and Reinette Grise.

Mr W. G. Pragnell, gardener to C. D. W. Digby, Esq., Sherbourne Castle, Dorset, exhibited perhaps the finest collection of vegetables ever exhibited at this season of the year: it consisted of about 50 dishes, the Tomatoes and Onions being remarkably fine. This deservedly obtained the first prize offered by Messrs Carter & Co. of High Holborne. One great feature of the show were the fine collections of Potatoes staged by Mr J. Betteridge, Chipping Norton (120 varieties); Mr P. M'Kinlay, Beckenham; and Mr R. Dean, Ealing. The prizes were awarded in the order named. Messrs Carter & Co. exhibited an excellent collection, not for competition; and another excellent assortment came from the Society's garden at Chiswick. Very fine Smooth Cayenne Pines came from her Majesty's gardens, Frogmore, and 3 fine fruit of Black Prince were staged from the Duke of Wellington's garden, Strathfieldsaye. Chrysanthemums were not so fine as we have seen them at previous exhibitions, but nevertheless some very effective groups were staged. In Class 1 excellent examples of Incurved, Pomponé, and Japanese varieties were set up by Mr Rowe, gardener, Dover House, Roehampton. This collection deservedly obtained the first prize. Mr Forsyth of Stoke Newington was second with good plants, but not quite at their best. Messrs Dickson & Co., Amherst Nurseries, Hackney, were third. The principal exhibitors in the other classes were Messrs Cutbush of Highgate, Mr Coote, Mr Butcher, Mr Herrington, Messrs Jackson of Kingston, Mr Whitaker, Mr Rowe, Mr Clarke, and Mr Huinell. Messrs Veitch & Sons were first for a fine stand of cut flowers. The following list comprises the best kinds exhibited in the different classes: Mr George Rundle, Alfred Salter, James Salter, Gloria Mundi, Annie Salter, Prince of Wales, Lord Derby, Elaine, Empress of India, Lady Hardinge, General Slade, Princess of Wales, Guernsey Nugget, John Salter, Jardin des Plantes, Erecta Superba, Red Dragon, Sultan, Chang, Golden, Lilac, and White Cedo Nulli, Bob, Rose Trevenna, and Madame Martha.

A fine group of white-flowered Bouvardias was staged by Messrs J. Standish & Co., who also took the first prize offered for 6 varieties with well-grown plants of *B. Jasminiflora*, *B. Vreelandii*, and a new delicately-coloured variety named Bridal Wreath. Not the least novel and interesting points in the exhibition were the collections of berry-bearing, decorative plants. These were shown by Mr Smith, gardener, British House, Putney Heath; Mr J. George, Putney Heath; and Mr J. Aldous,—the prizes being awarded in the order named. The most effective were *Aucubas* of sorts, *Solanum capsicastrum*, *S. Yellow Gem*, *Cotoneaster Simmondsii*, *Cratægus pyracantha*, *Pernettya mucronata*, *P. microphylla*, *Skimmia oblata*, *S. Japonica*, and *Citrus Japonica*.

Among the new plants, a first-class certificate was awarded to Mr Waters for Golden Mrs Rundle Chrysanthemum—a sport from the white form of the same name. It is a beautiful incurved flower, and will be a valuable acquisition for exhibition purposes. A fine group of *Cyclamen persicum* was set up by Mr Clarke of Twickenham, and another by Mr Smith of Ealing. When clean and fresh, there are few autumn and winter decorative plants more valuable than these, either for Conservatory decoration, or for bouquets, button-holes, &c. A fine collection of the more recent *Dracænas* and other decorative plants was staged by Mr John Wills, and excited considerable attention. Mr Wills

grows only such plants as will stand considerable knocking about for the decoration of apartments and other indoor purposes. Altogether the meeting was one of the most interesting that has been held for some time, and one could wish the Society's affairs were in a more prosperous condition than they are at the present time.



Calendar.

KITCHEN-GARDEN.

IF weather should be wet, and snow lying on the ground, the usual course of digging and trenching may be suspended till the greater portion of the snow is gone, and the surface dry enough to walk on. Soil turned down wet and in a puddled state is very injurious, especially if the land is heavy. There is always plenty of work in such weather—such as making of pease and other stakes, cleaning any choice seeds, looking over roots and onions in store, keeping all clear from decay. We have known snow and manure turned into dry gravelly ground together, and prove advantageous. Get manure wheeled on to vacant space requiring it; but this should be done judiciously, and only where it is required. Rank manure may be trenched down, but well-rotted material may, as a rule, be more serviceable when placed under the top spit. Plenty of ground will now be cleared where early broccoli, carrots, and other roots have grown. An arrangement made what is to occupy it next season is of primary importance, and manure may be given accordingly. It is a good system to arrange contemporary crops as much together as possible. As examples, leeks, parsnips, and celery on the same plot will allow a large space to be cleared and prepared at one time. Beet, carrots, and second crops of potatoes do well to be placed together; but circumstances often prevent us doing what we consider "systematic." Economy of labour and of ground are always important matters. A good coating of soil, such as road grit, thoroughly decayed leaf soil, sand, rotted trimmings of walks, &c., is often more suitable for land than heavy dressings of rich manure. Deep trenching suits all crops, whether the season be very wet or extra dry. Where chalk or lime can be easily got, it may be judiciously used on heavy land.

Some of the more important matters at this season are protecting vegetable crops from frost and damp. Celery which has grown freely may be very tender, and should be protected with a coating of dry litter or fern spread among the tops; but when thaw sets in, the covering should be placed in heaps, leaving the celery clear to the milder weather.

Cauliflower, Lettuce, and Endive plants should be freely exposed when weather is mild. Fresh dry air is beneficial to all plants under glass protection. Where French Beans have had lights placed over them, and it is still worth while to look after them, great care is necessary in excluding frost and damp. Ours, which have been thus protected, are still affording pickings; but others forced in pots, and planted out in pits, are now plentiful, and the frames may be used for early Potatoes. Carrots, Radishes, Asparagus, &c. Keep up regular supplies of these as far as means will allow and demand requires. But, as we have before mentioned, it is false economy to keep up supplies of these forced things when other important crops or plants have to suffer in consequence. Where there are means and labour, large demands are easily met. Potatoes may be potted for planting out in frames; let them sprout under cool treatment, using light soil, and scarcely covering the eyes. Those forcing in pots should be kept thin in the tops, and have plenty of air, and be kept near the light. Those which are planted out late in July, and protected when frost sets in, and well matured, are much finer than those forced in pots, or the watery things grown in boxes of earth in cellars. Radishes may be sown between the rows of potatoes when planted out in beds. Early Frame, French Breakfast, and Short-top are three of the best for early work. Take up Chicory, Seakale, Silesian Beet, and

Rhubarb, and place them under warmth in the dark to force and blanch. When they are kept in an out-of-the-way spot, the old system of covering them on the ground with pots or boxes, thickly coated with manure and leaves, answers well. This should be beside the manure heap, where Vineries, Peachhouses, or other structures, are at work, and heated from 55° and upwards answers admirably. For Rhubarb, under the stages of stoves and forcing-pits are capital positions; and in towns where no gardens exist, good Rhubarb is often grown in boxes placed in sculleries, &c. Hard driving with heat at this season does much mischief, and sacrifices the finest qualities of the crop. Tomatoes in pots require similar treatment to potatoes. Keep them thin, and allow plenty of air; stop the shoots above the fruit. Those which have given us supplies since May are again started into free growth, and fruiting abundantly. They are on the back of melon pits, rooting through the bottoms of the pots into the melon soil. Autumn-sown plants are now in fruit on back of an early peachhouse now closed, and strings of those from outside hung up in warm dry sheds, &c., are ripening; but the disease met with in so many places is doing some damages here also. Mushrooms are generally abundant at this season; but they are often said to be a "mysterious" crop. A friend visiting us the other day, said he never in

his experience failed with Mushrooms. We regretted that we could not say the same, as we had failed at times under the best attention, and at other times had superabundance, when no attention whatever was given, and the latter is our experience at present. Horse-manure, neither wet nor dry, and full of ammonia, mild warmth, soft healthy loam for covering the beds, and, above all, good spawn, which has not run in the cakes, may be said to be the sum and substance of some of the volumes written by some of our most successful mushroom-growers. Where they are grown on ridges of manure, shaped like long potato pits in the open ground, they should be kept dry, if possible; and boarded covers are useful for this purpose, placing them over the litter. The success of some market men by these simple means is astounding. Keep up salad by frequent sowings; but Mustard and Cress should not be kept close and warm after it has grown a little. Get all operations advanced which are likely to help labour in the busy season. Box edgings may be renewed, and walks repaired when weather will allow. The herb ground may be trimmed and put in order, and the usual herbs may be lifted under protection and for forcing. Mint, Tarragon, Sorrel, and Fennel, are generally what are used in a green state, and kept growing in a mild warmth.

M. T.

FORCING DEPARTMENT.

Pines.—To have a good many ripe Queens in May and the early part of June is a desideratum with most Pine-growers, and means must now be taken to secure them. Look over the stock of the earliest Queens and select the required number of those most likely to start without making much growth, and plunge them about the middle of this month in a bottom-heat of 85° to 90°, with a night temperature of 65°. Let them have as much light as possible by placing them near the clearest glass that can be devoted to them. If very dry, water them with tepid weak guano-water, but do not keep them over-moist at the root, or the tendency—where such exists—to their growing on instead of starting into fruit will be encouraged. Rather keep the air more moist, with less water at the

root, until it can be clearly seen that the fruit is coming. Last autumn has, in many places, been most unfavourable for producing plants that are likely to fruit thus early without much trouble, and too much moisture now will increase the evil. Plants intended to start at this season should be under instead of over potted, and grown with a minimum of water at the root. Keep the remainder of the stock of Queens intended to form a succession to those just referred to quiet for the present. 55° at night is heat enough to keep them in good condition. Any suckers that are ready to pot on Smooth Cayennes and Charlotte Rothschild, and other winter fruiting sorts, and from which ripe fruit is now being cut, should be potted in 6 and 7 inch pots, and plunged in a bottom-heat of 85° to 90°, kept near

the glass and with a night temperature of 65°. Under such conditions they soon establish themselves, and make a fine succession to earlier potted ones. Any portion of the early-potted suckers that are likely to become severely pot-bound by the usual time for shifting should rather have a small shift at once than be left to get pot-bound and stunted; or they may be potted into 9-inch pots now, with the view of supplying ripe fruit from November till the end of next year. The surest way of having a constant supply of ripe fruit is to be potting suckers and shifting them frequently throughout the whole year. Attend carefully to fruit now swelling off. Do not allow the soil to get meally dry; at the same time avoid keeping it as damp now as in summer or autumn, especially after the fruit has attained full size. Otherwise some sorts will be likely to be black at the centre when cut, which is a frequent result of too much moisture, and the neglect of ventilation in the winter months. Let the heat for these range to 70° in ordinary weather, letting it decline a few degrees during sharp frosts and high winds. Apply coverings to the glass when this is practicable in preference to hard firing when the weather is severe. See that no portion of the young stock that are well rooted and plunged over hot-water pipes get over dry for a length of time, or they will be likely to start prematurely after being stoved.

Vines.—Give careful attention to all ripe Grapes still hanging on the Vines. They should be examined at least three times a-week, and all decaying berries removed. If the Vines are at all thickly set with leaves, let a portion of them be removed, so as to admit a more free circulation of air about the fruit and Vines as a whole. Do not let the temperature decline below 45° at any time, nor run higher than 50°. When the weather is wet or foggy, keep the front ventilators closely shut, with just warmth enough in the pipes to keep the heat as directed, and the air in circulation with a very little air at the highest part of the house, but so that no falling damp can drop into the house. When the weather is dry, increase the heat slightly early in the day, and ventilate more freely. Keep the sur-

face of borders, and everything else inside the vinery, as dry as possible; should the border crack, run a little dry earth into the crack. Where the setting of plants under Grapes yet to cut cannot be avoided, the crop may be cut and kept in a dry room, on the bottling system, now adopted in many cases with success. When the Vines in the early vinery have made about half an inch of a start, raise the night temperature to about 58°, increasing it 5° to 8° by day. If the early crop is from pot-Vines, and is required to ripen with the loss of as little time as possible, the temperature may range a few degrees higher than for permanent Vines. As a rule, avoid high night temperatures all through the dull sunless months, and reserve the harder forcing for the longer days and brighter sun. All vineries shut up last month with the intention of being started with artificial heat this month, will be much more likely to break freely and regularly if a bed of fermenting leaves and litter be placed on the inside border to be turned over in portions every day. This is not only good practice, as far as the results are concerned, but it saves coal. The outside borders of such vineries should, at least, be well protected from wet and cold, and will be the better of a bed of warm leaves and litter for three months at least, or till the roots of the Vines come vigorously into action. It is, however, our conviction, that to begin forcing permanent Vines with roots in an outside border is a waste of labour and wrong in principle, seeing that as good crops can be produced with far more uniform success and certainty from pot-Vines. Prune all Vines from which the fruit is cut; divest them of loose bark, and dress them with a thick coating of flower of sulphur, soot, cow manure, and loam in equal proportions, adding about the size of an egg of soft soap to every gallon. This dressing is especially desirable where there has been red-spider last season. At the same time, thoroughly wash all woodwork and glass, and paint it if necessary; and when all is done, remove the loose surface soil, replacing it with loam, having some bones and horse-droppings mixed with it. See that young Vines intended for planting in spring are secure from frost, that they do not get meally dry at the root, and are

kept in a cool airy place. Cut them now to the desired length. Now is a good time to collect turf for the formation of new borders. To get rid of wireworm, collect it when frozen, and if possible place it under cover to be mixed with other ingredients; at all events, avoid chopping and mixing it while wet. Young Vines planted last year should be cut down immediately they have shed all their leaves.

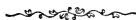
Peaches.—If the early trees have been pruned, &c., as directed last month, and shut up for the last fortnight, fire-heat should now be applied to keep the night temperature at 50° in mild weather, allowing it to decline a few degrees when cold. The secret of success in early forcing the Peach is to force cautiously, giving a little air daily, so that the bloom and the sexual organs are strongly developed. These conditions render a good set almost certain under favourable circumstances. Keep the atmosphere moderately moist by sprinkling the surface of the inside borders. The outside border should be managed much the same as directed for early Vines. Prune and otherwise put succession houses in order for forcing. Where young trees are still to plant, let this be completed at once if other arrangements are suitable. Much more depends on the border being in good condition when planting is performed than on planting at any given time. Planting can be successfully carried out from now till the time the buds begin to move outside.

Figs.—Start plants in pots about the middle of the month, by plunging them in a bottom-heat of from 75° to 80°, and giving them a night temperature of 50°. Surface the pots with horse-droppings and loam in equal proportions, and give them a good soaking

of weak manure-water at a temperature of 85°. Syringe the trees twice daily, and keep the air moist. Brown Turkey and Raby Castle are excellent for early forcing. Prune trees planted out in borders. Very little of the knife will be necessary where summer pruning and stopping have been properly attended to. But prune now in preference to the barbarous method of tying young wood in great bundles. Where the roots are in inside or limited borders, and trees are old and free-bearing, apply rich top-dressing.

Cucumbers.—Regulate the heat for these according to the weather, and apply coverings to the glass during cold and windy weather. 68° at night is high enough for the present. Increase the heat 5° or 8° if dry, and give more or less air daily. If they are grown in soil under which there are hot-water pipes, see that they do not suffer by getting too dry at the root; and always let the water be at 85° when applied. Avoid heavy cropping at this inactive season. Stop the young growths at every joint. If green-fly appears, kill or remove it if possible with the hand instead of smoking with tobacco just now. Sow for succession in a temperature of 70°. Keep the young plants near the glass, and grow with as little water as possible.

Strawberries in Pots.—Where vineries and Peach-houses are being started now, Strawberries may be placed on shelves near the glass. But a better place for starting them thus early is on a gentle hot-bed of leaves or tan near the glass in some light pit. Before they are put in heat, see that the drainage of each plant is correct, that the pots are clean, and that there are no worms in the soil. Protect the general stock of plants from severe frost and heavy rains.



Notices to Correspondents.

All business communications and all Advertisements should be addressed to the Publishers, and communications for insertion in the 'Gardener' to David Thomson, Drumlanrig Gardens, Thornhill, Dumfriesshire. It will further oblige if all matter intended for publication, and questions to be replied to, be forwarded by the middle of the month, and written on *one side* of the paper only. It is also requested that writers forward their name and address, not for

publication unless they wish it, but for the sake of that mutual confidence which should exist between the Editor and those who address him. We decline noticing *any* communication which is not accompanied with name and address of writer.

We have to thank several friends for their communications duly received, and regret that want of space compels us to postpone their publication till next month.

H.S.—It is difficult for us to say why your bulbs do not bloom. Do you give them a season of rest, as well as one of active growth? If not, such is likely to be the cause; and if so, let them have a season of comparative dryness and repose.

S.M.—Very likely the cause of the barrenness of your Vine is, that the strong coarse growth—as you describe it—has never been properly ripened. The last few seasons have not been favourable for ripening the wood of Vines that are growing grossly. We should suspect that your border is rich, and that you have not used sufficient fire-heat to ripen the wood. Next season give them sufficient fire-heat, and circulation of dry, warm air, to ripen their growths, till they are thoroughly brown and hard. Do not allow the wood and foliage to be crowded, and see that the border is well drained. You should procure and read carefully W. Thomson's treatise on the Vine, to be had at our office.

JOHN CAMERON.—A Solanum, but we are not certain which species. A mere scrap is in nine cases out of ten not sufficient by which to recognise a plant, especially after it is so wasted by the post.

S. T.—Hellebore powder, applied through a dredger or gauze bag, will destroy the caterpillars without destroying the foliage; or a solution of it may be applied with a syringe or water-pot.

A.P.—The society in question is a burlesque on horticulture, and a disgrace to the first horticultural nation in the world. The sooner it is supplanted with some improved order of things the better. When a thing becomes despicably bad, there is hope of something better. Nothing more for the present; you will hear of something startling soon.



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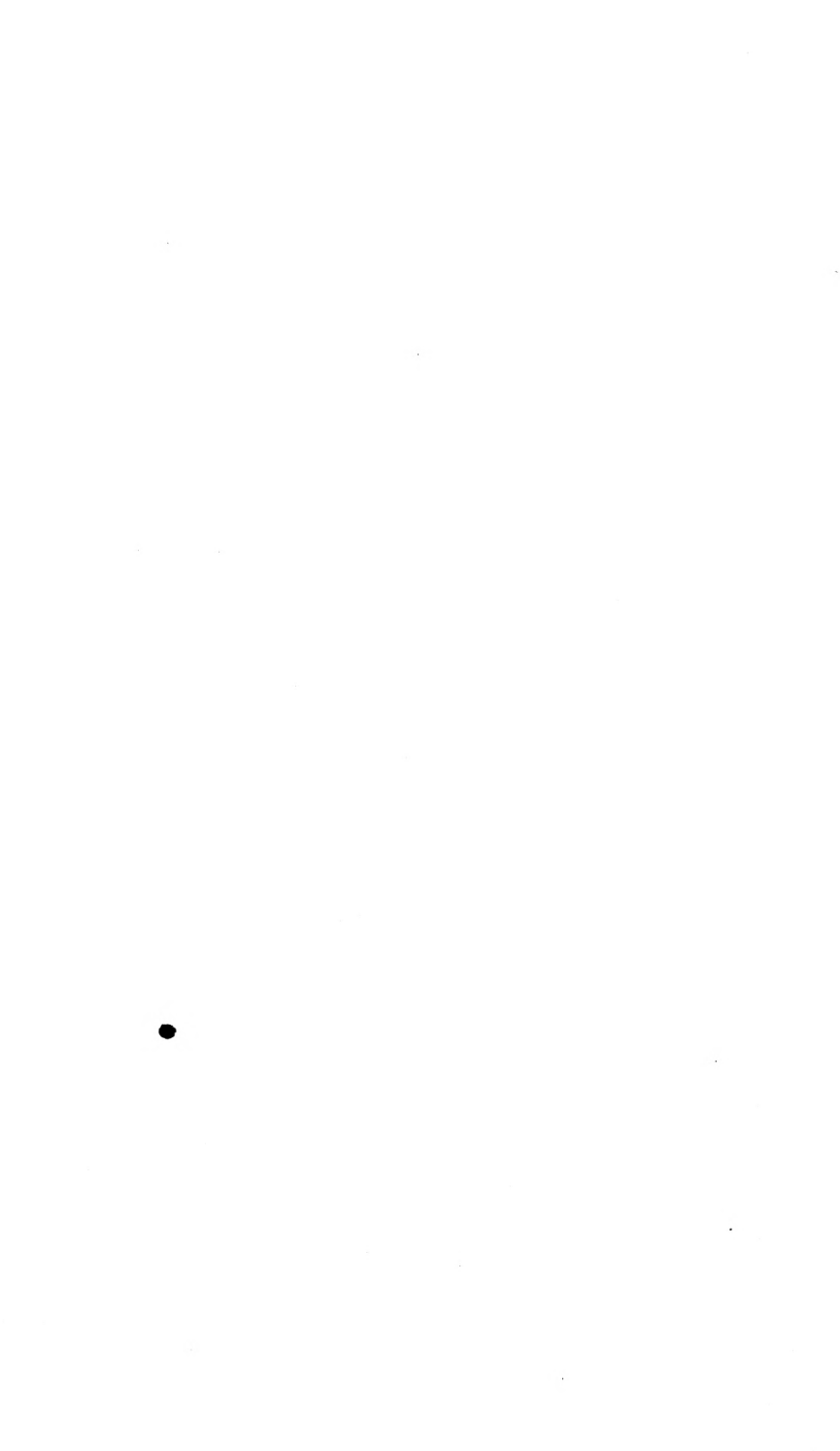
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